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PROCEEDINGS

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OF THE

Institute
STATEN ISLAND (ASSOCIATION) OF ARTS
AND SCIENCES

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[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

VOLUME I.

JUNE 1905-MAY 1907.

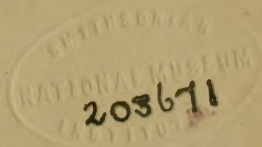
EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

NEW BRIGHTON, N. Y.

1907.



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STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

HISTORY,
ACT OF INCORPORATION,
CONSTITUTION AND BY-LAWS,
RULES AND REGULATIONS OF THE BOARD OF TRUSTEES
LIST OF MEMBERS, TRUSTEES, OFFICERS,
AND STANDING COMMITTEES.

NEW BRIGHTON, N. Y.

1906.

Resolved, that the publication committee be requested to prepare and have printed, at the earliest practicable date, a publication in pamphlet form, to include a brief history of the Association, the Act of Incorporation, Constitution and By-Laws, Rules and Regulations of the Board of Trustees, and a list of members, trustees, officers and standing committees."

[Abstract from the minutes of the meeting of the Board of Trustees, held on December 5th, 1905.]

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

HISTORY, ACT OF INCORPORATION, CONSTITUTION AND BY-LAWS, RULES
AND REGULATIONS OF THE BOARD OF TRUSTEES, LIST OF
MEMBERS, TRUSTEES, OFFICERS AND STANDING
COMMITTEES.

Prepared and edited by the Publication Committee.

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HISTORY

The movement to organize a scientific society on Staten Island, which ultimately resulted in the incorporation of this Association, had its earliest inception about twenty-five years ago, when the feasibility of such an organization was informally discussed by a few residents who frequently enjoyed field trips together for the purpose of collecting specimens of natural history. The matter may be said to have assumed its first definite shape, however, on Friday, September 9th, 1881, when Arthur Hollick, Dr. Frederick Hollick and Dr. Nathaniel L. Britton

happened to be together and made out a preliminary list of those whose interest it was thought might be enlisted. A small notebook was started in circulation, in which anyone who favored the idea was requested to inscribe his name. After some twenty names had been thus obtained an invitation was issued, signed by N. L. Britton, Arthur Hollick and Wm. T. Davis, to meet at the residence of Mr. Davis, on Saturday evening, November 12th, 1881, in response to which the following were present: Sanderson Smith, Alfred L. Carroll, Bradish J. Carroll, William T. Davis, Arthur Hollick, Dr. Nathaniel L. Britton, Samuel Henshaw, Charles W. Leng, Wilton G. Berry, Ernest F. Neilson, Ernest F. Birmingham, Edward C. Delavan, Jr., Charles W. Butler and George W. Wright. An organization was effected, a constitution and by-laws adopted, the name "Natural Science Association of Staten Island" chosen, and the following officers elected: president, Sanderson Smith; recording and financial secretary, Charles W. Leng; corresponding secretary, Arthur Hollick; curator, William T. Davis.

During the first few months following its organization the Association had no settled place of abode and held its meetings, by courtesy, either in Public School No. 3, on Prospect Avenue, New Brighton, or in the rooms of the Young Men's Catholic Union, on Carroll Place, New Brighton. In April, 1882, the Board of Trustees of the Village of New Brighton offered the Association the use of a large room in the Village Hall, rent free, which it occupied continuously for fourteen years.

As soon as these permanent quarters were secured a beginning was made toward the foundation of a museum, which steadily grew to larger and larger proportions, until it finally reached its present dimensions. On November 10th, 1883, the first number of the Proceedings was issued, in which may be found abstracts of the reports of the officers for the preceding year, as follows: "The treasurer reported the Association free from debt and with a balance of \$28.00 in the treasury.

"The secretary reported a total of 70 members on the roll and an average attendance of 17 at each meeting.

"The curator reported 56 separate donations to the collections, consisting of 412 objects, besides additions to the library."

The publication of the Proceedings resulted in an immediate and rapid increase in the library through exchange of publications, and the proper care of the books soon became, as it is at the present time, one of the most troublesome administrative problems with which the Association had to deal.

After about four years the experimental stage was thought to have

been successfully passed, and the incorporation of the Association was decided upon and accomplished, in 1885, through the following instrument:

TO ALL WHOM IT MAY CONCERN:—

The undersigned, citizens of the United States, and of the State of New York, and residents of the County of Richmond, desiring to associate themselves for scientific purposes, and to form a body corporate under the provisions of Chapter 319 of the laws of 1848, entitled "Act for the Incorporation of Benevolent, Charitable, Scientific and Missionary Societies," and the several acts amendatory thereof, do hereby make, sign, and acknowledge the following certificate of incorporation:

(1.) The name and legal title of this society shall be "THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND."

(2.) The particular business and object of this Association shall be to collect and preserve objects of natural science and antiquity, with special reference to local matters, and to diffuse correct knowledge in regard to same, by means of publications, meetings and public lectures.

(3.) The management of the business and affairs of this Association shall be intrusted to a board of five trustees, which, for the first year of its incorporation, shall consist of the following persons:—Alfred Ludlow Carroll, M. D., Ernest A. Congdon, Arthur Hollick, Ph. B., William T. Davis and Samuel Henshaw.

(4.) The principal office of this Association shall be located in the village of New Brighton, in the State of New York, and the County of Richmond aforesaid.

In witness whereof we have hereunto annexed our hands and seals on this the 19th day of January, in the year of our Lord one thousand eight hundred and eighty-five.

ALFRED LUDLOW CARROLL.
ERNEST A. CONGDON.
ARTHUR HOLLICK.
WILLIAM T. DAVIS.
SAMUEL HENSHAW.

STATE OF NEW YORK, }
COUNTY OF RICHMOND, }

On this, the 19th day of January, 1885, appeared before me Alfred Ludlow Carroll, M. D., Ernest A. Congdon, Arthur Hollick, Ph. B., William T. Davis and Samuel Henshaw, to me personally known to be the same persons described in and who signed and executed the foregoing certificate, and they severally acknowledged the execution thereof.

ROBERT HUMPHREY,
Notary Public, Richmond Co., N. Y.

I, the undersigned, Justice of the Supreme Court, of the Second Judicial District, hereby approve the within certificate, and consent to the filing of the same.

C. E. PRATT, J. S. C.

Filed with the County Clerk of Richmond Co., N. Y., on Friday, January 30th, 1885.

ARTHUR HOLLICK, Ph. B.
SAMUEL HENSHAW.

Filed with the Secretary of State of New York State, on Thursday, February 19th, 1885.

ALFRED LUDLOW CARROLL, M. D

During the next few years the meetings were poorly attended, and the membership steadily declined until it reached its low water mark of 36 in 1892. These were anxious times for those who had the success and welfare of the Association at heart. The administrative and scientific work devolved upon a constantly lessening number of active workers, and while the collections and library continued to increase in bulk and value, the income of the Association and the interest in its efforts and aims were constantly waning. Probably the greatest source of anxiety was the uncertainty in regard to the permanency of the quarters in the Village Hall. A new board of Village Trustees might order the Association to vacate any year, and with the limited means at command it would have been impossible to house or even to store the collections and library for any length of time. A movement was therefore started in 1889 to raise a building fund, and subscriptions amounting to \$1,600.00 were pledged, but shortly afterwards the Association was advised that quarters would be provided for its museum and library in the then newly projected Staten Island Academy building, and the movement was abandoned.

The annual meeting of November 12th, 1892, inaugurated a new epoch in the history of the Association. At that meeting Mr. Walter C. Kerr was elected president, and his energy and clear insight into conditions soon made themselves felt. The membership began to increase at once. At the end of the next three years it was larger than at any previous period in the history of the Association; and it has steadily increased ever since, largely by the addition of members who, while not taking an active part in scientific work, are pleased to support the Association as representing a valuable factor in the intellectual activity of the community.

In 1896 co-operation was effected on the most generous of terms with the trustees of the Staten Island Academy, and the museum and library of the Association were transferred and housed in permanent quarters in the Academy building. Perhaps nothing that has occurred has so clearly indicated the advisability of providing for further expansion as the growth of the collections since they were placed where they

were known to be safe and free from possible injury or disturbance. The room which in the beginning was ample to accomodate and display the accumulations of fourteen years is now, after only nine years in the Academy, so full that it is little better than a storeroom, and valuable material is waiting, ready to be donated as soon as additional space can be provided for it.

The movement for wider activities and broader scope in the affairs of the Association began to assume definite shape during the summer of 1904 when information was informally sought and obtained by the secretary in regard to the relations between the Municipality and institutions such as the Brooklyn Institute of Arts and Sciences, the American Museum of Natural History, the New York Botanical Garden, etc. During the following autumn the executive committee of the Association was formally requested to consider the whole subject and to report what steps it would be advisable to take in order that co-operation with the Municipal authorities might be effected. Their recommendations resulted in the appointment, at the regular meeting on January 21st, 1905, of a committee on incorporation, consisting of President Howard R. Bayne, William A. Shortt, Montague Lessler and Edward C. Delavan, and a committee on change of name, consisting of William H. Mitchill, William T. Davis and Dr. Arthur Hollick.

At the regular meeting on February 18th the latter committee submitted a report containing suggestions for changes in the name of the Association, and the one formally approved was "The Staten Island Association of Arts and Sciences."

At a special meeting on March 16th the committee on incorporation submitted a draft of a proposed act to incorporate the Staten Island Association of Arts and Sciences, which was approved, and the committee was requested to have the act introduced in the State Legislature. This was done on March 21st; it passed without opposition and was signed by the Governor on May 17th.

At the regular meeting on May 20th the following resolution was adopted:

Resolved: that a special meeting of the Natural Science Association of Staten Island be called for Saturday evening, June 3rd, 1905, at the Staten Island Academy, for the purpose of taking action under Section 6 of Chapter 526 of the Laws of 1905, incorporating the Staten Island Association of Arts and Sciences, and that the secretary include in the call for the meeting the following resolution:

Resolved: that the Board of Trustees of this Association be and they are hereby authorized to assign and convey to the Staten Island Association of Arts and Sciences all the property, real and personal, owned and held by this Association."

At the special meeting on June 3rd the foregoing resolution was adopted, and the assignment was formally authorized by the adoption of the following resolutions:

Resolved: that all the property of the Natural Science Association of Staten Island be assigned to the Staten Island Association of Arts and Sciences.

Resolved: that a suitable deed of assignment be prepared, expressing a nominal consideration, and that the same be executed by the President and Board of Trustees, in the name of said Association and the said Board of Trustees, and properly acknowledged.

Resolved: that the said deed and all the property thereby assigned be delivered to the Staten Island Association of Arts and Sciences by the President of the Natural Science Association of Staten Island."

The Natural Science Association of Staten Island then adjourned *sine die* and was replaced by the Staten Island Association of Arts and Sciences.

ACT OF INCORPORATION.

Laws of New York—1905.

CHAP. 526.

AN ACT to incorporate the Staten Island association of arts and sciences and to provide for the care and housing of its museum and library by the city of New York.

Accepted by the city.

Became a law, May 17, 1905, with the approval of the Governor. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

§ 1. Louis H. Achilles, Augustus Acker, Darwin L. Bardwell, Howard R. Bayne, Charles P. Benedict, Read Benedict, Michael Berardini, Nils Bergquist, Wilton G. Berry, Herman Beyer, Samuel A. Blan, J. Harvey Bostwick, Brewster Boyd, Willard A. Boyd*, Nathaniel L. Britton, Orrin L. Brodie, Henry B. Brownell, John M. Carrere, James Chapin, Edward B. Clapp†, Lester W. Clark, Sr., Lester W. Clark, Jr., Oliver D. Clark, Walter L. Clark, Thomas Craig, George Cromwell, Osborn M. Curtis, Morgan Davis, William T. Davis, Nathaniel B. Day, Daniel Delehanty, Edward C. Delavan, John De Morgan, Lewis Denton, Samuel M. Dix, Philip Dowell, Edward P. Doyle, Herbert M. Dunning‡, Stafford C. Edwards, Lothar W. Faber, Jarvis R. Fairchild, John T. Fetherston, Ernest Flagg, Lewellyn W. Freeman§, Oliver P. Geoffroy, Louis P. Gratacap, William B. Grubbe, Daniel S. Hage, Daniel J. Haverty, Walter B. Hayward, Samuel A. Henszey, Milo D. Herron, J. Blake Hillyer, William R. Hillyer, Arthur Hollick, Rupert H. Hopkins, George S. Humphrey, Charles W. Hunt, Fred F. Hunt, Charles A. Ingalls, Manuel J. Johnston||, A. K. Johnston, William A. Johnston, T. F. Kane, W. F. Keeney, Walter C. Kerr, A. C. Knothe, Winfield R. Koller, Wheaton B. Kunhardt, William J. Lederle, Charles W. Leng, Montague Lessler, James P. Lough, William McDonald¶, Arthur A. Michell, William H. Mitchell, Ira K. Morris, Joseph Neuburg, Leavitt C. Parsons, Frederick E. Partington, Horace W. Patterson, Alexander

* Insert the name Edward C. Bridgman, inadvertently omitted in the original.

† For "Edward B. Clapp" read Ebenezer B. Clapp.

‡ For "Herbert M. Dunning" read Herbert S. Dunning.

§ For "Lewellyn W. Freeman" read Llewellyn W. Freeman.

|| For "For Manuel J. Johnston" read Manuel J. Johnson.

¶ For "William McDonald" read William Mac Donald.

Perry, Charles M. Porter, W. L. Rolands*, George S. Scofield, William A. Shortt, Alanson B. Skinner, Sanderson Smith, S. McK. Smith, Benjamin J. Stanton, Mead E. Stone†, Edward M. Stothers, Edwin Stumpp, William A. Suydam, Arthur G. Thompson, Lawrence A. Toepp, Louis L. Tribus, Charles R. Tucker, George W. Tuttle, E. E. Valentini, J. E. Vidal, Norman S. Walker, Jr., William C. Walser, William Y. Wemple, Edward J. Wheeler, George M. Whitehouse, William G. Willcox, and such other persons as may hereafter be associated with them and their successors, are hereby created a body corporate under the name of the Staten Island association of arts and sciences, to be located in the borough of Richmond, city of New York.

§ 2. The purpose of the said corporation shall be to promote intellectual activity and intercourse and to encourage an interest in the sciences, arts and history; to collect and preserve objects of scientific and historic interest, especially such as relate to Staten Island; to establish and maintain a public museum and reference library; to provide facilities for recording and publishing scientific and historical information; to preserve from needless destruction such plants and animals as are harmless and to protect objects and places of natural beauty, of scientific and of historic interest.

§ 3. The said corporation shall have power to make and adopt a constitution and by-laws; makes‡ rules and regulations for the transaction of its business; the admission, suspension and expulsion of members of said corporation and for the number, election, terms and duties of its officers; and make such rules and regulations as may be necessary for the safekeeping and proper use of its property; and may from time to time alter or modify its constitution, by-laws, rules and regulations, and shall be subject to the provisions of the general corporation law.

§ 4. Howard R. Bayne, Arthur Hollick, J. Blake Hillyer, Charles A. Ingalls, William T. Davis, George S. Scofield, Walter C. Kerr, William A. Johnston, Lester W. Clark, senior, Louis P. Gratacap, Charles W. Leng, William H. Mitchill and George H. Humphrey§, together with the president of the borough of Richmond and the district superintendent of schools in said boroughs||, ex-officio, shall be and hereby are declared to be the trustees of said corporation until their successors shall be elected pursuant to such constitution and by-laws as the corporation may adopt. Five trustees shall constitute a quorum for the transaction of business.

* For "W. L. Rolands" read Willis L. Rowlands.

† For "Mead E. Stone" read Medad E. Stone.

‡ For "makes" read make.

§ For "George H. Humphrey" read George S. Humphrey.

|| For "boroughs" read borough.

§ 5. Said corporation may take and hold by purchase, grant, lease, gift, devise or bequest, either absolutely or in trust, real or personal property, necessary or proper for the purposes of its incorporation and for the endowment of the same or any branch thereof.

§ 6. The natural science association of Staten Island and its board of trustees are hereby authorized to assign and convey all the property, real or personal, owned and held by it, and the said property when so transferred to, shall vest in and be held and used for the said Staten Island association of arts and sciences, as its successor, for the uses and purposes set forth in section two of this act. When the transfer of this property hereby authorized shall be completed and an affidavit made to that effect by the president of the natural science association of Staten Island and sworn to before a justice of the supreme court, shall be filed in the office of the secretary of state, the corporate existence of the said natural science association of Staten Island shall cease and determine.

§ 7. The commissioners of the sinking fund of the city of New York may authorize the president of the borough of Richmond to provide such room or rooms in the borough building, in the borough of Richmond, city of New York, as may not otherwise be in use, and they may otherwise provide and set apart land in said borough for the erection of a suitable building or buildings thereon, for the keeping and maintaining of the museum, collection and library of the Staten Island association of arts and sciences, subject to all the conditions in section two hundred and seventeen, chapter four hundred and forty-six, of the laws of nineteen hundred and one, and for the purpose of providing means for the erection of said building or buildings it shall be the duty of the comptroller of the city of New York, upon being authorized thereto by the board of estimate and apportionment, to issue and sell corporate stock of the city of New York, in the manner now provided by law, sufficient for the same; and the board of estimate and apportionment may include in the annual budget for the maintenance and care of said museum, collection and library of the Staten Island association of arts and sciences a sum not exceeding ten thousand dollars, and the board of trustees of the said Staten Island association of arts and sciences are empowered to enter into a contract with the proper officials of the city of New York, looking to the leasing of such rooms and building or buildings, and the care of its museum, collection and library as herein provided.

§ 8. The museum, collection and library of the said Staten Island association of arts and sciences shall be open and free to the public at all reasonable times on such terms of admission as shall be approved

by the board of trustees of said association acting in conjunction with the commissioner of public works for the borough of Richmond, in the city of New York, so long as the city of New York shall provide a place for its care and maintenance.

§ 9. This act shall take effect immediately.

STATE OF NEW YORK, }
Office of the Secretary of State, } ss.

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

JOHN F. O'BRIEN,
Secretary of State.

RESOLUTION ACCEPTING THE ACT OF INCORPORATION.

"*Resolved:* that the Act of Incorporation (Chapter 526 of the Laws of 1905) be and is hereby accepted and adopted by the incorporators constituting the Staten Island Association of Arts and Sciences."

[Abstract from the minutes of the meeting of the incorporators, held on June 3rd, 1905.]

CONSTITUTION AND BY-LAWS.

CONSTITUTION.

ARTICLE I.

The provisions of the Act of Incorporation, Chapter 526 of the Laws of 1905, are adopted and form part of this Constitution.

ARTICLE II.

The management of the affairs of the Association shall be vested in a board of fifteen trustees, composed of thirteen members to be elected by the Association at the first annual meeting and thereafter as provided in the By-Laws, together with the president of the Borough of Richmond and the district superintendent of schools in said Borough for the time being, as ex-officio members. A president, first and second vice-presidents, recording secretary, corresponding secretary and treasurer shall be elected yearly by the said Board at its annual meeting. Any vacancy in either of the above offices, or in the Board of Trustees, except in the case of ex-officio members, may be filled by the Board of Trustees, and the persons so selected shall serve until their successors are elected. Any trustee absent for three consecutive meetings of the Board may, unless an excuse for such absence satisfactory to the Board be presented, be declared by the Board to have vacated the office of trustee.

ARTICLE III.

The Board of Trustees may make such rules and regulations, appoint such committees and employ such persons as they may deem advisable to aid in the performance of the duties expressed or implied in the Act of Incorporation.

ARTICLE IV.

The principal office of the Association shall be located in the Borough of Richmond in the City and State of New York.

ARTICLE V.

Amendments to this Constitution, not incompatible with the Act of Incorporation, may be made by a vote of two-thirds of the members present and qualified to vote at any special meeting of the Association called for that purpose, or at any regular meeting, on not less than five days' notice of such meeting by mail, sent to each member and including the text of the proposed amendments, provided such proposed

amendments shall have been previously submitted in writing and announced at a regular meeting of the Association.

BY-LAWS.

I.—MEETINGS.

Sec. 1. *Annual Meetings*: The annual meetings of the Association shall be held on the third Saturday evening of May. Notice of each meeting shall be mailed by the recording secretary to all members and patrons qualified to vote, not less than five days prior to the date of the meeting, and ten members shall constitute a quorum for the transaction of business.

Sec. 2. *Regular Meetings*: The regular meetings of the Association shall be held on the third Saturday evening of each month from October to May inclusive. Not less than three days' notice of each meeting shall be mailed by the recording secretary to all ex-officio, active and life members and patrons. Ten members shall constitute a quorum for the transaction of business, but a quorum for the prosecution of scientific work or for the carrying out of a scientific program shall always be assumed.

Sec. 3. *Special Meetings*: The president may of his own motion, and he shall on the written request of ten or more members qualified to vote, call a special meeting of the Association. Not less than five days' notice of the meeting shall be given to all members qualified to vote, and the notice shall include a statement of the purpose for which the meeting is called. At all special meetings ten members shall constitute a quorum for the transaction of business.

II.—ORDER OF BUSINESS.

Sec. 1. *Annual Meetings*: The Order of Procedure at the annual meetings of the Association shall be:

1.
Reading of Minutes.
2.
Annual Report of the Board of Trustees.
3.
Annual Reports of Officers.
4.
Election of Trustees for the Ensuing Year.
5.
Deferred or New Business.

6.

Annual Address of the President.

7.

Scientific Program.

8.

Adjournment.

Sec. 2. *Regular Meetings*: The Order of Procedure at the regular meetings of the Association shall be:

1.

Reading of Minutes.

2.

Miscellaneous Business.

3.

Scientific Program.

4.

Adjournment.

Sec. 3. *Special Meetings*: The Order of Procedure at all special meetings of the Association shall be:

1.

Reading of the Notice of the Meeting.

2.

Action on the Specified Object of the Meeting.

3.

Adjournment.

III.—MEMBERSHIP.

Sec. 1. The Association shall consist of active members and may also include life members, honorary members, corresponding members and Patrons. Active members, life members and elected patrons only shall have any rights in the property of the Association, and they only shall be eligible to any elective office.

Sec. 2. *Active Members*: Active members shall be members of the Corporation and be not less than fifteen years of age. Nominations for active membership shall be made and seconded in writing at a regular meeting of the Association, and the nominees shall be voted for by ballot at the next regular meeting or at a special meeting called for that purpose, and three negative votes shall reject. Each active member shall on election pay an entrance fee of three dollars (\$3.00) if elected previous to the regular meeting in January, or one dollar and fifty cents (\$1.50) if elected at or subsequent to the January meeting and

prior to the regular meeting in April, and thereafter annual dues of three dollars (\$3.00) payable at the beginning of each fiscal year. The entrance fee shall be remitted if members be elected at the regular meeting in April. Active members shall be entitled to vote at all meetings of the Association; to receive free one copy of each publication issued by the Association; and to have free admission and access to the museum and library of the Association and to all lectures or other entertainments given under the auspices of the Association. Any active member one year in arrears of dues shall be suspended from the privileges of membership until such arrears of dues are paid, and if these are not paid within six months thereafter such member may be dropped from the roll by a majority vote of the trustees present at any meeting of the Board.

Sec. 3. *Life Members*: Any active member may become a life member by contributing at one time fifty dollars (\$50.00) to the general funds of the Association. Life members shall have all the privileges of active members, and they shall be relieved from the payment of annual dues.

Sec. 4. *Honorary Members*: Honorary members shall be chosen from those persons who have rendered conspicuous service in line with the general purposes of the Association. They shall be elected by the Board of Trustees, and their number shall be limited to twenty-five. Nominations to honorary membership may be submitted to the Board of Trustees by any member of the Association at any time.

Sec. 5. *Corresponding Members*: Corresponding members shall be chosen from those persons residing at a distance who are known to be interested in the purposes of the Association, or who are actively engaged in promoting similar purposes. They shall be elected by the Board of Trustees. Nominations to corresponding membership may be submitted to the Board of Trustees by any member of the Association at any time.

Sec. 6. *Patrons*: Any person contributing at any one time one hundred dollars (\$100.00) to the general funds of the Association shall be a patron, and on election by the Board of Trustees shall enjoy all the privileges of life membership. Any active or life member may, upon such payment, become a patron without thereby forfeiting any of the privileges of such membership.

IV.—OFFICERS.

Sec. 1. *President*: It shall be the duty of the president to preside at all meetings of the Board of Trustees and of the Association and to exercise the customary duties of a presiding officer. He shall deliver an address at the annual meeting following his election to office.

Sec. 2. *Vice-Presidents*: It shall be the duty of the first vice-president to act as the presiding officer in the absence of the president and to exercise the functions of the office of president at such times as the president may be unable to act. In the absence or inability to act of the president or first vice-president the duties of the president shall be discharged by the second vice-president.

Sec. 3. *Recording Secretary*: It shall be the duty of the recording secretary to call any meeting to order at which the president and vice-presidents are absent; to keep the minutes of all meetings of the Association and of the Board of Trustees, and a corrected list of the names and last known addresses of all the members and patrons of the Association. He shall notify the trustees of their election to office and all members and patrons of their election, suspension and expulsion, and all committees of their appointment. He shall send all notices of meetings to members entitled to receive the same and conduct all official correspondence with them, except such as may pertain to the office of treasurer. He shall have charge of the official records of the Association and also of its Corporate Seal, which he shall affix and attest as directed by the Board of Trustees. He shall render a report at the annual meeting which shall include the number of members and patrons elected, resigned, deceased and dropped from the roll during the year; the total membership of the Association at date; the number of regular and special meetings held and the average attendance at each during the year.

Sec. 4. *Corresponding Secretary*: It shall be the duty of the corresponding secretary to keep a corrected list of the names and last known addresses of all the members and patrons of the Association. He shall conduct the general and unofficial correspondence of the Association and shall keep a complete file of all communications received by him or referred to him by the Board of Trustees, together with copies of all communications transmitted in reply to the same. He shall report at the regular meetings of the Association upon correspondence received and answered, and at the annual meeting he shall render a report showing the total number of communications received by, referred to, and answered by him during the year.

Sec. 5. *Treasurer*: The treasurer shall have charge of all moneys belonging to or under the control of the Association, and he shall keep and invest the same in such manner as the Board of Trustees may from time to time direct. He shall keep a corrected list of the names and last known addresses of all active and life members and patrons, showing their financial relations with the Association. He shall notify all

members in regard to their dues and receive and account for all dues and all contributions to the funds of the Association and for any income that may accrue from any property owned or controlled by the Association. He shall pay all debts against the Association, subject to such rules and resolutions as the Board of Trustees may adopt, and he shall report to the Board from time to time, as required, the condition of the finances of the Association. At the annual meeting he shall render a report showing all receipts and expenditures for the entire year and all assets and liabilities. He shall give a bond in such sum and in such form as the Board of Trustees shall direct.

V.—BOARD OF TRUSTEES.

Sec. 1. Election: The elective trustees shall be voted for by ballot at the annual meetings of the Association, and at the first annual meeting the thirteen candidates who receive the largest number of votes shall be declared elected. At this meeting five trustees shall be elected for one year, four for two years, and four for three years, and at each subsequent annual meeting the vacancies shall be filled in a similar manner.

Sec. 2. Annual Meeting: The annual meeting of the Board of Trustees shall be held immediately after the annual meeting of the Association.

VI.—FISCAL YEAR.

The fiscal year shall commence on the day of the annual meeting.

VII.—AMENDMENTS.

Amendments or additions to these By-Laws may be made by a majority vote of the members present and qualified to vote at any special meeting of the Association called for that purpose; or at any regular or annual meeting of the Association, provided that such amendments or additions shall have been submitted in writing and announced at a previous regular meeting of the Association.

VIII.—GENERAL PROVISIONS.

All procedure and business of the Association not fixed by the Constitution or By-Laws shall be determined by the Board of Trustees, and all questions of parliamentary order and procedure not specially provided for in the By-Laws shall be governed by Cushing's Manual.

RESOLUTION ADOPTING THE CONSTITUTION AND BY-LAWS.

Resolved: that the Constitution and By-Laws prepared by the committee and amended at this meeting of the Association be and they are hereby adopted, together with such verbal or grammatical changes as the committee may deem advisable for clearness of expression in the final drafting of the same."

[Abstract from the minutes of the meeting of the Association, held on October 21st, 1905.]

RULES AND REGULATIONS OF THE BOARD OF TRUSTEES.

I.—MEETINGS.

In addition to the annual meeting of the Board, as provided for in the By-Laws, stated meetings shall be held on the first Saturday evening in January, April and October. Special meetings may be called by the president at any time.

Not less than two days' notice of each meeting shall be mailed by the secretary to all members of the Board.

II.—ORDER OF BUSINESS.

The Order of Business at all stated meetings of the Board shall be as follows:

1. Reading of Minutes.
2. Report of Treasurer.
3. Report of Secretary.
4. Reports of Committees.
5. Election of Honorary and Corresponding Members and Patrons.
6. Unfinished Business.
7. New Business.
8. Adjournment.

III.—STANDING COMMITTEES.

Executive Committee: The president, the recording secretary and the treasurer of the Association, together with two other members of the Board, shall constitute the executive committee, of which the president and the recording secretary shall respectively be the chairman and the secretary. Three members shall constitute a quorum for the transaction of business.

The committee shall have general charge of the affairs of the Association during the intervals between the meetings of the Board of Trustees. They shall transact such business and execute such orders as the Board may refer to them, and they may initiate such other business as they may deem advisable for the welfare of the Association and report thereon at the next meeting of the Board.

Any action by the committee not previously authorized by the Board shall be deemed to be in force until formally disapproved by resolution

of the Board; but the committee shall not incur any liability in excess of fifty dollars (\$50.00) without the sanction of the Board.

Auditing Committee: The auditing committee shall consist of two members of the Board of Trustees.

They shall from time to time examine and verify the books and accounts of the treasurer, especially the annual report of the treasurer, and report thereon to the Board.

Publication Committee: The publication committee shall consist of the recording secretary and two other active members of the Association.

The committee shall have general charge of the editing, printing, and distribution of all publications issued by the Association. They shall formulate rules for methods of citation, terminology and nomenclature to be followed in all contributions submitted for publication by the Association, and determine the size and form of all publications and the style of typography to be used in the printing of the same.

General Provisions: The president shall be a member, ex-officio, of all standing committees.

Except in the case of ex-officio members the president shall appoint all members of standing committees and fill all vacancies in the same.

IV.—SPECIAL COMMITTEES.

The president shall appoint all members of special committees, unless they are specially appointed by resolution of the Association or of the Board of Trustees, and fill all vacancies in the same.

[Adopted December 5th, 1905.]

ACTIVE AND LIFE MEMBERS

The date in parenthesis indicates the year in which the member was elected.
A black letter **O** indicates that the member was one of the organizers of the Natural Science Association of Staten Island.
A black letter **L** indicates that the member is a life member.

A

- Louis Henry Achilles, West New Brighton. (1902).
- Augustus Acker, New Brighton. (1902).
- Arthur Huntington Allen, New Brighton. (1905).

B

- Louis Balmat Baker, New Brighton. (1905).
- Darwin Long Bardwell, New Brighton. (1904).
- Howard Randolph Bayne, New Brighton. (1895).
- Charles Patrick Benedict, West New Brighton. (1897).
- Read Benedict, West New Brighton. (1902).
- Michael Berardini, Rosebank. (1898).
- Nils Bergquist, Tompkinsville. (1899).
- Wilton Guernsey Berry, 48 W. 73rd St., New York. (1881). **O**.
- Samuel Augustus Blan, Port Richmond. (1904).
- James Harvey Bostwick, Tompkinsville. (1902).
- Brewster Boyd, West New Brighton. (1903).
- Willard Albion Boyd, New Brighton. (1905).
- Thomas A. Braniff, Tompkinsville. (1906).
- Edward Clark Bridgman, Stapleton. (1895).
- Nathaniel Lord Britton, 2965 Decatur Ave., New York. (1881). **O**.
- Orrin Lawrence Brodie, Port Richmond. (1904).
- Henry Barnard Brownell, New Brighton. (1902).

C

- John Merven Carrère, 101 E. 65th St., New York. (1896).
- James Chapin, New Brighton. (1904).
- Ebenezer Billings Clapp, 425 4th Ave., New York. (1897).
- Lester Williams Clark, Sr., New Brighton. (1897).
- Lester Williams Clark, Jr., New Brighton. (1897).
- Oliver Durfee Clark, Tompkinsville. (1904).
- Walter Leighton Clark, Dongan Hills. (1898).
- Howard Henderson Cleaves, Princes Bay. (1905).
- * Thomas Craig, 1013 Sherbrook St., Montreal, Can. (1889). **L**.
- George Cromwell, Dongan Hills. (1898).
- Osborn Marcus Curtis, New Brighton. (1902).

* Elected an honorary life member Dec. 14th, 1901.

D

- Morgan Davis, Stapleton. (1884).
 *William Thompson Davis, New Brighton. (1881). O. L.
 Nathaniel Briggs Day, New Brighton. (1902).
 Edward Close Delavan, New Brighton. (1881) O.
 Daniel Delehanfy, New Brighton. (1902).
 John De Morgan, West New Brighton (1902).
 Lewis Homer Denton, West New Brighton. (1904).
 Samuel Morris Dix, Stapleton. (1897).
 Timothy Florence Donovan, West New Brighton. (1906).
 Philip Dowell, Port Richmond. (1903).
 Edward Puritan Doyle, Port Richmond. (1902).
 Herbert Sylvester Dunning, New Dorp. (1904).

E

- Stafford Clarence Edwards, New Brighton. (1905).
 George T. Egbert, Mariners Harbor. (1905).

F

- Lothar Washington Faber, 401 West End Ave., New York. (1881).
 Richard Fair, Stapleton. (1906).
 Jarvis Rose Fairchild, New Brighton. (1902).
 John Turney Fetherston, New Brighton. (1904).
 Ernest Flagg, Dongan Hills. (1897).
 Llewellyn Warren Freeman, Mariners Harbor. (1904).
 Thomas Alexander Fulton, Tompkinsville. (1905).

G

- Oliver Philip Geoffroy, West New Brighton. (1892).
 Louis Pope Gratacap, West New Brighton. (1881).
 James Percy Griffin, New Brighton. (1905).
 William Brush Grubbe, West New Brighton. (1904).

H

- Daniel S. Hage, Dongan Hills. (1902).
 Daniel James Haverty, New Brighton. (1896).
 Walter Brownell Hayward, Tompkinsville. (1902).
 Samuel Alexander Henszey, New Brighton. (1902).
 Milo Dibble Herron, 66 W. 107th St., New York. (1904).
 John Blake Hillyer, New Brighton. (1896).
 William Ross Hillyer, Port Richmond. (1902).

* Became a life member 1906.

Arthur Hollick, New Brighton. (1881). **O**.
 Rupert Henry Hopkins, West New Brighton. (1905).
 James Clayton Howard, Stapleton. (1905).
 Charles Humphrey, New Brighton. (1905).
 George Scranton Humphrey, West New Brighton. (1897).
 Charles Wallace Hunt, Stapleton. (1881).
 Frederick Furneaux Hunt, New Brighton. (1894).
 William Floyd Hunt, Stapleton. (1897).

I

Charles Arthur Ingalls, West New Brighton. (1899).

J

Manuel John Johnson, New Brighton. (1903).
 Algernon Knox Johnston, Princes Bay. (1893).
 William Armour Johnston, Princes Bay. (1896).

K

Thomas Francis Kane, New Brighton. (1903).
 Watson Frederick Keeney, West New Brighton. (1905).
 Walter Craig Kerr, Dongan Hills. (1892).
 Adolph Charles Knothe, Tompkinsville. (1903).
 Winfield Ritter Koller, Port Richmond. (1903).
 *Wheaton Bradish Kunhardt, 43 Exeter St., Reading, Pa. (1885). **L**.

L

William Joseph Lederle, 4215 Stiles St., W. Philadelphia, Pa. (1896).
 Charles William Leng, West New Brighton. (1881). **O**.
 Montague Lessler, Tompkinsville. (1904).
 James Perot Lough, Tompkinsville. (1902).
 Thomas Owen Lowe, Tompkinsville. (1905).

M

William Mac Donald, Port Richmond. (1903).
 John Martin, Stapleton. (1905).
 Arthur Ahmuty Michell, West New Brighton. (1903).
 William Hinman Mitchell, Port Richmond. (1902).

P

Leavitt Cosley Parsons, Tompkinsville. (1903).
 Frederick Eugene Partington, New Brighton. (1901).
 Horace Wilber Patterson, New Brighton. (1903).
 Alexander Perry, New Brighton. (1897).

* Became a life member 1896.

R

- John Rader, New Brighton. (1905).
 Thomas Daniel Rambaut, New Brighton. (1905).
 Willis Locke Rowlands, Tompkinsville. (1903).

S

- George S. Scofield, Rosebank. (1902).
 William Allaire Shortt, Tompkinsville. (1899).
 Alanson Skinner, Tompkinsville. (1903).
 Samuel McKee Smith, New Brighton. (1903).
 *Sanderson Smith, Port Richmond. (1881). **O. L.**
 Benjamin Jefferson Stanton, Tompkinsville. (1904).
 Medad Elisha Stone, New Brighton. (1896).
 Edward Merrell Stothers, Port Richmond. (1897).
 Edwin Adolph Stumpp, New Brighton. (1904).
 William Asay Suydam, Castleton Corners. (1903).

T

- Arthur Gordon Thompson, Rosebank. (1901).
 Lawrence Adam Toepp, West New Brighton. (1902).
 Louis Lincoln Tribus, Stapleton. (1895).
 Charles E. Trout, West New Brighton. (1905).
 Charles Rollins Tucker, New Brighton. (1903).
 George William Tuttle, New Brighton. (1904).

U

- Guillermo F. Ulink, Tompkinsville. (1905).

V

- Evelyn Ernst Valentini, Tompkinsville. (1905).
 Joseph Eugene Vidal, Stapleton. (1902).

W

- Norman Stewart Walker, Jr., Castleton Corners. (1902).
 William Charles Walser, New Brighton. (1887).
 William Yates Wemple, New Brighton. (1902).
 Edward Jewitt Wheeler, West New Brighton. (1902).
 George Meredith Whitehouse, 116 Riverside Drive, New York. (1895).
 William Goodenow Willcox, West New Brighton. (1902).
 John Warren Wiseman, West New Brighton. (1905).

* Elected an honorary life member Nov. 13th, 1897.

MEMBERS OF THE BOARD OF TRUSTEES, 1905-1906

I.—ELECTIVE MEMBERS.

Howard Randolph Bayne, *president*.Arthur Hollick, *secretary*.

Philip Dowell.

William Thompson Davis.

Louis Pope Gratacap.

Charles Arthur Ingalls.

John Blake Hillyer.

George Scranton Humphrey.

William Armour Johnston.

Charles William Leng.

Walter Craig Kerr.

George S. Scofield.

William Hinman Mitchill.

2.—EX-OFFICIO MEMBERS.

The President of the Borough of Richmond,

Hon. George Cromwell.

The District Superintendent of Schools in the Borough of Richmond,

Darwin Long Bardwell.

OFFICERS OF THE ASSOCIATION, 1905-1906.

President—Howard Randolph Bayne.*First Vice-President*—William Thompson Davis.*Second Vice-President*—William Hinman Mitchill.*Recording Secretary*—Arthur Hollick.*Corresponding Secretary*—Philip Dowell.*Treasurer*—John Blake Hillyer.

STANDING COMMITTEES, 1905-1906.

I.—EXECUTIVE COMMITTEE.

Howard Randolph Bayne, *chairman*.Arthur Hollick, *secretary*.

John Blake Hillyer.

William Hinman Mitchill.

Charles Arthur Ingalls.

2.—AUDITING COMMITTEE.

George Scranton Humphrey, *chairman*.

Charles Arthur Ingalls, *secretary*,

Howard Randolph Bayne, *member ex-officio*.

3.—PUBLICATION COMMITTEE.

Philip Dowell, *chairman*.

Arthur Hollick, *secretary*.

William Thompson Davis.

Howard Randolph Bayne, *member ex-officio*.

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES .

[Late Natural Science Association of Staten Island]

MEMORIAL NUMBER

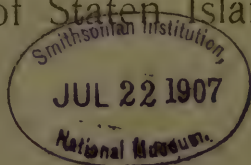
COMMEMORATING THE CELEBRATION

OF THE

TWENTY-FIFTH ANNIVERSARY

of the organization of the

Natural Science Association of Staten Island



New Brighton, Borough of Richmond, City of New York

[Issued March 15, 1907]

OFFICERS
OF THE
NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND
1881—1882.

President—Sanderson Smith.
Recording and Financial Secretary—Charles William Leng.
Corresponding Secretary—Arthur Hollick.
Curator—William Thompson Davis.

OFFICERS
OF THE
STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.
1906—1907.

President—Howard Randolph Bayne.
First Vice-President—William Thompson Davis.
Second Vice-President—William Hinman Mitchill.
Recording Secretary—Arthur Hollick.
Corresponding Secretary—Philip Dowell.
Treasurer—John Blake Hillyer.
Honorary Curator—Charles Arthur Ingalls.

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late Natural Science Association of Staten Island]

MEMORIAL NUMBER

CELEBRATION

OF THE

TWENTY-FIFTH ANNIVERSARY

of the organization, on Saturday, November 12th, 1881,

of the

Natural Science Association of Staten Island

HOTEL CASTLETON

New Brighton, Borough of Richmond, City of New York,

Monday, November 12th, 1906.

PROCEEDINGS

in connection with the 25th Anniversary of the organization
of the

Natural Science Association of Staten Island

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INTRODUCTION

RESOLUTION ADOPTED BY THE ASSOCIATION, MAY 19, 1906

"Mr. J. Blake Hillyer referred to the fact that the 12th of next November would be the 25th anniversary of the organization of the Natural Science Association of Staten Island and suggested that the event should be recognized in some manner suitable to the occasion.

Resolved, that the Board of Trustees be requested to consider and to formulate a program to celebrate and commemorate the twenty-fifth anniversary of the organization, on November 12th, 1881, of the Natural Science Association of Staten Island".

[Abstract from the minutes of the annual meeting of the Association, held on Saturday, May 10, 1906]

REPORT OF THE EXECUTIVE COMMITTEE

"Items of business referred to the Committee by the Board of Trustees were presented by the Secretary and acted upon as follows:

* * * *

Voted: that the following program be suggested for the celebration and commemoration of the 25th anniversary of the organization, on November 12th, 1881, of the Natural Science Association of Staten Island:

1st—A subscription dinner on November 12th, 1906, to celebrate the completion of twenty-five years of organized scientific work on Staten Island, to which all members of the Staten Island Association of Arts and Sciences shall be invited to subscribe, and to which a limited number of guests of the Association shall be invited to attend.

2nd—The inauguration of a new, additional, series of publications, to be designated "Memoirs of the Staten Island Association of Arts and Sciences," designed to give, in time, as complete a presentation as possible of the geology, botany, zoology, archeology and antiquities of Staten Island in a uniform style,—each number of the series to deal with one subject only, and to be a complete monograph in itself,—the title of the series to be followed by the legend "Established 1906, to commemorate the organization, on November 12th, 1881, of the Natural Science Association of Staten Island," or some legend to the above effect."

[Abstract from the minutes of the meeting of the Executive Committee, held on Tuesday, July 17th, 1906]

ACTION OF THE BOARD OF TRUSTEES

"The report of the Executive Committee was submitted in the form of the minutes of the meeting held by the Committee on July 17th, 1906.

Voted: that the report of the Executive Committee on the proposed celebration and commemoration of the 25th anniversary of the organization of the Natural Science Association of Staten Island be received, and approved in regard to its general plan and scope; and that the President be requested to appoint the chairman of a committee of arrangements, who together with the President shall select such additional members as they may deem advisable to constitute the committee, whose duty it shall be to arrange all details for the proposed dinner, on November 12th, in general accordance with the suggestions submitted by the Executive Committee.

* * * *

Voted: that the suggestions of the Executive Committee in relation to the establishment of a new, additional series of publications be referred to the Publication Committee for consideration and report."

[Abstract from the minutes of the stated meeting of the Board of Trustees, held on Saturday, October 6th, 1906]

ANNOUNCEMENT BY THE COMMITTEE OF ARRANGEMENTS

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

(Late Natural Science Association of Staten Island.)

ANNOUNCEMENT.

At the annual meeting of the Association, held on May 19th, 1906, the following resolution was adopted :

Resolved, that the Board of Trustees be directed to consider and to formulate a program to celebrate and commemorate the 25th anniversary of the organization, on November 12th, 1881, of the Natural Science Association of Staten Island.

In accordance with the above resolution the Board appointed a special committee on the subject, and this committee has arranged for a *subscription dinner, at the Hotel Castleton, on Monday evening, November 12th*, to which all members of the Association are hereby invited and urged to attend.

The subscription is \$2.50, and guests' tickets may be obtained at the same price.

Members are requested to bring as guests any friends who may be interested in the occasion, and they are specially requested to invite as guests any lady members of their families.

A number of distinguished persons, prominent as public officials, and in the arts and sciences, have been invited to be present and to deliver appropriate addresses.

This will be a unique event for Staten Island, celebrating and commemorating as it will the successful completion of a quarter of a century of organized scientific work in the community, and it is hoped that all will unite in making it a success.

If you intend to be present kindly fill in and return the enclosed slip in the accompanying stamped and addressed envelope, not later than November 5th, making check payable to J. Blake Hillyer, Treas.

ARTHUR HOLLICK, *Chairman*,
HOWARD R. BAYNE,
DANIEL DELEHANTY,
WILLIAM H. MITCHILL,
DARWIN L. BARDWELL,
J. BLAKE HILLYER,

Committee.

INVITED GUESTS

HON. GEORGE B. MCCLELLAN,
Mayor of the City of New York.

HON. HERMAN A. METZ,
Comptroller of the City of New York.

HON. PATRICK F. MC. GOWAN,
President of the Board of Aldermen,

HON. GEORGE CROMWELL,
President of the Borough of Richmond.

HON. JOHN F. AHEARN,
President of the Borough of Manhattan.

HON. LOUIS F. HAFFEN,
President of the Borough of the Bronx.

HON. BIRD S. COLER,
President of the Borough of Brooklyn.

HON. JOSEPH BERMEL,
President of the Borough of Queens.

DR. JOHN S. BILLINGS,
Director of the New York Public Library.

MR. WILLIAM T. HORNADAY,
Director of the New York Zoological Park.

DR. NATHANIEL L. BRITTON,
Director of the New York Botanical Garden.

SIR CASPAR PURDON CLARKE,
Director of the Metropolitan Museum of Art.

DR. HERMON C. BUMPUS,
Director of the American Museum of Natural History.

MR. FRANKLIN W. HOOPER,
Director of the Brooklyn Institute of Arts and Sciences.

MR. SANDERSON SMITH,
The first President of the Natural Science Association of Staten Island, 1881—1882.

MR. WALTER C. KERR,
President of the Natural Science Association of Staten Island 1892—1899.

MEMBERS AND GUESTS PRESENT

Rev. Arthur H. Allen
 Howard R. Bayne
 Mrs. Howard R. Bayne
 Nils Bergquist
 Willard A. Boyd
 Mrs. Willard A. Boyd
 Thomas A. Braniff
 Dr. Nathaniel L. Britton
 Mrs. Nathaniel L. Britton
 Orrin L. Brodie
 Mrs. Orrin L. Brodie
 Mrs. Agnes Brodie
 Dr. Hermon C. Bumpus
 Rev. Charles S. Burch
 James Chapin
 William T. Davis
 Capt. Daniel Delehanty
 Mrs. Daniel Delehanty
 Miss Delehanty
 Miss Bertha Delehanty
 John DeMorgan
 Lewis H. Denton
 Mrs. Lewis H. Denton
 Timothy F. Donovan
 Stafford C. Edwards
 Mrs. Stafford C. Edwards
 Thomas A. Fulton
 Mrs. Thomas A. Fulton
 Oliver P. Geoffroy
 John F. Gould
 Mrs. John F. Gould
 Samuel A. Henszey

J. Blake Hillyer
 Dr. Arthur Hollick
 Mrs. Arthur Hollick
 Miss Grace Hollick
 Charles Humphrey
 Mrs. Charles Humphrey
 George S. Humphrey
 Mrs. George S. Humphrey
 William F. Hunt
 Charles A. Ingalls
 Mrs. Charles A. Ingalls
 Algernon K. Johnston
 Frederick A. Johnston
 William A. Johnston
 Thomas F. Kane
 Watson F. Keeney
 Walter C. Kerr
 Winfield R. Koller
 James P. Lough
 William MacDonald
 Mrs. William MacDonald
 John Martin
 Mrs. John Martin
 Hon. Herman A. Metz
 William H. Mitchell
 Mrs. William H. Mitchell
 John Rader
 Alanson Skinner
 Frederick W. Skinner
 Harry F. Towle
 Louis L. Tribus
 Mrs. Louis L. Tribus

LETTERS AND TELEGRAMS

CITY OF NEW YORK,
OFFICE OF THE MAYOR.

October 22d, 1906.

Mr. Howard R. Bayne,
67 Wall Street, City.

Dear Sir:—The Mayor directs me to acknowledge your letter of October 17, inviting him to attend the twenty-fifth anniversary dinner of the Staten Island Association of Arts and Sciences, at the Hotel Castleton, on the evening of Monday, November 12, and to express his regret that owing to the demands on his time, it will be impossible to accept.

His Honor further instructs me to thank you for your thoughtfulness.

Respectfully,

William A. Willis, Executive Secretary.

DEPARTMENT OF FINANCE,
City of New York.
Herman A. Metz, Comptroller.

October 18, 1906.

Mr. Howard R. Bayne,
President, Staten Island Association
of Arts and Sciences.

Dear Sir:—I beg to acknowledge receipt of your invitation on behalf of the Staten Island Association of Arts and Sciences, to attend its 25th anniversary dinner on the evening of November 12th, and to say that if it be possible for me to do so I shall be very glad to be present. Thanking you for this courtesy, I am,

Yours very truly,

H. A. Metz.

The City of New York
Office of the
PRESIDENT OF THE BOARD OF ALDERMEN
City Hall

October 29, 1906.

Dr. Arthur Hollick,
Chairman Committee of Arrangements,
New Brighton, New York.

Dear Sir:—Please accept my thanks for your courteous invitation to attend the dinner of the Staten Island Association of Arts and Sciences,

to be given on the evening of the 12th instant in commemoration of the 25th anniversary of its organization, and I assure you it would afford me great pleasure to accept the same, but—as I have written to Superintendent Bardwell that I had already made an engagement for that evening which it will probably be impossible for me to forego—I regret very much that I am unable to accept your courteous invitation.

Very truly yours,
P. F. McGowan.

OFFICE OF THE

PRESIDENT OF THE BOROUGH OF RICHMOND

November 8, 1906.

Dr. Arthur Hollick,
New Brighton, N. Y.

My dear Doctor Hollick:—I beg that you will pardon me for not having responded earlier to the very kind invitation of the Staten Island Association of Arts and Sciences to be present and to speak at the dinner on Monday night next in celebration of the 25th anniversary of the founding of the original society. My excuse for not having replied before is that during the last two weeks I have been exceedingly busy and have had time to attend to only the most urgent official business.

It is with very sincere regret that I find myself unable to accept the kind invitation of the Association because of an engagement made many weeks ago from which I cannot get released, although I endeavored to do so yesterday in order that I might attend your dinner. I am very sorry about it because, as you know, I take a very great interest in the Association and have great hopes for its large expansion and usefulness.

With very sincere regret that I cannot be with you on Monday night, but with best wishes for the great success of the dinner, I remain,

Yours very sincerely,
George Cromwell.

City of New York
Office of

THE PRESIDENT OF THE BOROUGH OF MANHATTAN
City Hall

Oct. 29th., 1906.

Arthur Hollick, Esq.,
Staten Island Association of Arts and Sciences,
New Brighton, Staten Island, N. Y.

Dear Sir:—I have your kind invitation to be present at the dinner at

the Hotel Castleton, on the evening of November 12th, and beg you to accept my best thanks for your courtesy and remembrance. I shall make every effort to attend at that time.

Yours very truly,
John F. Ahearn.

The City of New York.
Office of the
PRESIDENT OF THE BOROUGH OF THE BRONX,
Municipal Building, Crotona Park.
Louis F. Haffen, President.

New York, Oct. 29th, 1906.

Dr. Arthur Hollick,
Chairman, Committee of Arrangements,
Hotel Castleton, St. George, S. I., City.

Dear Sir:—I beg to acknowledge receipt of your invitation to be one of the guests at the dinner of the Staten Island Association of Arts and Sciences, to be held at Hotel Castleton, St. George, Staten Island, on the evening of the 12th day of November next, at 7 o'clock, for which please accept my thanks.

I regret very much my inability to be present, but it is absolutely impossible for me to reach Staten Island on said night after attending to other engagements I have for said evening.

Yours truly,
Louis F. Haffen.

[TELEGRAM]

Brooklyn, N. Y., November 12, 1906.

Dr. Arthur Hollick, Chairman,
Committee of Arrangements, etc.

Hotel Castleton, St. George, Staten Island, N. Y.

I regret very much that it will be impossible for me to attend your dinner tonight. Comptroller Metz informs me that he is going and my sorrow is lightened by the knowledge that you will have in him the biggest and best part of the City government.

Bird S. Coler.

40 LAFAYETTE PLACE, NEW YORK.

October 30, 1906.

Arthur Hollick, Chairman, Committee of Arrangements,
Staten Island Association of Arts and Sciences,
New Brighton, S. I.

Dear Sir:—I have the honor to acknowledge the receipt of your invitation to be one of the guests at the dinner of the Staten Island

Association of Arts and Sciences on the evening of November twelfth, for which I beg to return thanks. I regret that in consequence of a previous engagement, it will be impossible for me to have the pleasure of being present.

Very sincerely yours,
J. S. Billings.

THE ZOOLOGICAL PARK

New York

November 5, 1905.

Dr. Arthur Hollick, New Brighton, N. Y.

Dear Dr. Hollick:—I have delayed replying to your kind invitation to the anniversary dinner of the Staten Island Natural Science Association in the hope that I might find it possible to accept. But I am reluctantly compelled to admit that I am yet physically unfit to go out nights and enjoy evening occasions.

By careful attention I can manage to get through my day's work, but by the time night comes I am physically and mentally exhausted and good for nothing. I have not spent an evening out since last April.

Under the circumstances I can only thank you most gratefully for your very kind and much appreciated invitation, and assure you that were I physically able I would joyously accept. It would give me great pleasure to participate in such an anniversary.

Wishing the Association long life and great prosperity, I remain

Sincerely yours,
W. T. Hornaday.

NEW YORK BOTANICAL GARDEN,

BRONX PARK,
NEW YORK CITY.

November 2nd, 1906.

Dr. Arthur Hollick,
New Brighton, N. Y.

Dear Sir:—Replying to your letter of October 25th, I accept with pleasure the invitation of the Staten Island Association of Arts and Sciences to be present at the dinner to be held on the evening of November 12th. I will speak on the subject that you suggest.

Yours truly,
N. L. Britton.

METROPOLITAN MUSEUM OF ART,
CENTRAL PARK,
FIFTH AVENUE AND EIGHTY-SECOND STREET,
OFFICE OF THE DIRECTOR,
NEW YORK.

October 30th, 1906.

Mr. Arthur Hollick,

Chairman, Committee on Arrangements,

Staten Island Association of Arts and Sciences.

Dear Sir:—I have the pleasure to acknowledge the receipt of your letter of the 25th instant inviting me to be one of the guests on the evening of the 12th of November.

I regret, however, that a previous engagement for that evening will prevent me from accepting your kind invitation, for which I thank your committee. I beg to remain,

Yours very faithfully,

C. Purdon Clarke.

AMERICAN MUSEUM OF NATURAL HISTORY,
NEW YORK.

November 1, 1906.

My Dear Dr. Hollick:—Many thanks for yours of October 25, in which you so courteously invite me to be one of the guests at the dinner of the Staten Island Association of Arts and Sciences, to be held at the Hotel Castleton, St. George, Staten Island, on the evening of November 12, at 7 o'clock. It will give me pleasure to be present and to meet you at that time.

Very cordially yours,

H. C. Bumpus.

Dr. Arthur Hollick, New Brighton,
Boro' of Richmond, New York.

THE BROOKLYN INSTITUTE OF ARTS AND SCIENCES.
Founded, 1824. Re-Incorporated, 1890.
Director, Prof. Franklin W. Hooper, M. A.

OFFICE: 502 FULTON STREET,
BROOKLYN.

October 29th, 1906.

Dr. Arthur Hollick, New Brighton,

Borough of Richmond, New York City.

My Dear Dr. Hollick:—I am in receipt of your letter of October 25th containing the invitation of the Staten Island Association of Arts

and Sciences to be its guest at dinner at St. George, Staten Island, on the evening of the 12th of November, in commemoration of the Twenty-fifth Anniversary of the organization of the Natural Science Association of Staten Island.

I have been interested in this Association partly through yourself, and partly through friends, for several years, and I assure you that it gives me very great pleasure to accept the invitation.

I will try to say something, in response to your request, on the subject proposed in your letter.

Very sincerely yours,
Franklin W. Hooper.

THE BROOKLYN INSTITUTE OF ARTS AND SCIENCES,
Founded, 1824. Re-Incorporated, 1860.
Director, Prof. Franklin W. Hooper, M. A.

OFFICE: 502 FULTON STREET,
BROOKLYN.

November 8, 1906.

Dr. Arthur Hollick, New Brighton,
Borough of Richmond; New York City.

My Dear Dr. Hollick:—I very much regret that it is going to be impossible for me to attend the dinner on Monday evening, November 12th, as I had definitely arranged to do. I regret exceedingly that I cannot be a member of your gathering on that evening to congratulate those who are present upon the work already accomplished in the interest of an institute of arts and sciences in the County of Richmond, and also to speak a word of appreciation of the plans of the Association.

Owing to the decease of a member of my family, I am compelled to cancel my engagement.

Very sincerely yours,
Franklin W. Hooper.

New York, N. Y., Oct. 29, 1906.

Dr. Arthur Hollick;
New Brighton, N. Y.

My Dear Dr. Hollick:—I have your favor of the 25th instant and will take pleasure in doing anything I can for the Association of Arts and Sciences, and will therefore be glad to say what I can on the occasion of the dinner on November 12th.

Anticipating pleasure in meeting you and the other members at that time, I am, with due appreciation of your request,

Truly yours,
Walter C. Kerr.

ADDRESSES

ADDRESS OF WELCOME

HOWARD R. BAYNE

President of the Staten Island Association of Arts and Sciences.

LADIES AND GENTLEMEN:

It is my pleasant duty to extend to you all a most cordial greeting and welcome, and on behalf of the Association, specially to assure the ladies and gentlemen, our guests, of the gratification and honor we feel at their presence around this board.

We are here this evening to celebrate the 25th anniversary of the organization of the Natural Science Association of Staten Island. A quarter of a century closes tonight since 14 gentlemen met at the home of Mr. William T. Davis, at Tompkinsville, and formed the society which we now represent. A number of the organizers are still with us and constitute the most helpful and valuable material we have.

Many changes have occurred in our community during this long period. Our population has nearly doubled. The physical appearance of the Island has in some parts completely changed. Many, once well known and prominent among us, have been removed by death or the vicissitudes of fortune which characterize more than anything else our American life today. We have emerged from the simple village and country life with which we were altogether familiar into something with which we were unfamiliar. We have passed into the civic and social complications of the metropolis of the western hemisphere, with all its great opportunities, its high aspirations, and its world-wide sympathies. And if we have been slow to take our place in the march of progress and to claim for our community its share in the distribution of public opportunities, it has been due, not, I think, to lack of a sense of the need of improvement and advance but rather to the lack of coöperation in laying the foundation broadly and well for the intellectual and moral as well as the material welfare of our borough.

The Association we here represent tonight stands for this discreet and public spirited coöperation.

To it the community owes a debt that can never be paid, except by recognition and acknowledgement and encouragement in the years to come. Its work, quietly, unobtrusively, effectively prosecuted for a quarter of a century, has been a labor of love, which the muse of His-

tory will doubtless some day record high up on the tablets reserved for those deeds which are not to fade from the memory of man. Some one has said that he most benefits his fellow man who discovers truth. During all these long years, in loving studiousness, members of this body have been gathering and storing up the truths of nature for the knowledge and welfare of their fellow men. The catalogue of what they have accomplished may be found, to some extent at least, in the publications issued by the Association from the year 1883. These papers, serially numbered from that date, have gone forth, with their human message, to all parts of this country and to many parts of the world. Scientific bodies at home and abroad have gladly welcomed them. Libraries and institutions of learning, by their steadfast subscriptions, testify to their appreciation of the value of these publications, while frequent requests for back numbers, and a constantly growing exchange list, apprise us more and more that a prophet is not without honor save in his own country and among his own people. These publications have completed 9 volumes, and a new series is beginning with volume 1 to commemorate the reorganization of the Association on June 3rd, 1905.

Twenty-five years of study of nature on Staten Island have accumulated by insensible degrees specimens of local botany, mineralogy, geology, and zoology in great number, range, and value. In the herbarium there are about 1500 local plants. In the geological collection every feature of interest is represented. Among the specimens of local fauna, members of the Association have made quite complete collections of fresh and salt water shells, moths, butterflies, beetles, and other insects, birds' eggs, snakes and other reptiles. Local antiquities are represented by specimens of Indian life and by Revolutionary and later relics, implements of war, coins, and documents of many kinds and of varied historical interest.

It is said by those competent to judge that the museum of this Association is in certain departments probably one of the most complete and comprehensive local collections known.

It is with deep regret that I have to admit that this unique collection is without a home, and is and for years has been practically on storage in different places, unavailable to the members of the Association or to the public at large. The mass of it is stored in one of the rooms of the Staten Island Academy—thanks to the courtesy of that institution.

During all these twenty-five years we have also been gathering scientific publications by exchange, purchase, and donation, until we

have secured an extensive and most valuable library of volumes, bound and unbound, which if destroyed could not perhaps be replaced. This collection also is unavailable, because, as in the case of our museum, we have nowhere to place it for access by those wishing to use it.

This has been the situation with which the present managers of the Association have had to deal and to which they have given most serious consideration.

It had long been the wish of this body to rescue its collection and library from the dust and obscurity of mere storage and place them where they could be seen, studied, and enjoyed by the public. It was felt that in the formative period of our community this purpose could not be accomplished merely by private enterprise or by private expense; that contemplating exclusively public benefit it should be recognized as a public undertaking and aided, as similar undertakings in other boroughs, by the public purse.

This conclusion necessitated new corporate powers, to be conferred by the Legislature, which neither the Greater City, nor our Association hitherto possessed. It became necessary to "publicise" our body and to grant to the City power to lease space in the Municipal building and to provide land and money for the erection of suitable buildings for keeping and maintaining the museum and library.

These preliminary powers have been conferred under a special charter, granted unanimously by the Legislature, by an Act which promptly met the approval of the Governor and became a law May 17th, 1905.

The old corporation, by this legislative alchemy, became transfused into the new, and we stand here tonight by this happy consummation, fully empowered to be the medium of conveying to the public of the Borough of Richmond for its perpetual benefit this rich result of devoted scientific research, of a value difficult to estimate from a commercial standpoint, and, what is more to the purpose, of a value incalculable from a moral, intellectual, educative, and social standpoint.

Let it not be supposed that we do not confidently expect the City administration to do its duty in the premises. So far as we have thus gone, we have found a friendly disposition on the part of City officials, which augurs well for our plans. We have applied for space in the Municipal building, but it has not yet been determined by the Sinking Fund Commissioners whether space there necessary for our use can be spared from other public purposes having prior claim to accommodation.

But what we need, most and best of all, is a building specially designed and erected as a museum building, capable, however, of enlarge-

ment as time may require, worthy of the noble purposes to which it is devoted, and in keeping with the ideals of this great City. We may well be proud of the public institutions of Greater New York, but we should not be so content with them as to feel that nothing may be done to extend their beneficent influences to our own borough. We are entitled to appropriations for something else than the making of highways and sewers, the removal of garbage, and the establishment of handsome quarters for the imposition and collection of taxes. However essential to our welfare all such departments may be, they are not the only things we need.

No community that contents itself with facilities for mere material existence can make much progress toward a high degree of civilized life. Such facilities are enjoyed in their greatest perfection when the highest culture and best ideals obtain. Indeed they are the effect, not the cause, of civic cultivation and the best public spirit.

Let us adopt an intelligent principle of action on this subject, and then let us proclaim it and live up to it. And, in due time, we shall create a public opinion, which no official, however high, can disregard, and no difficulties, however obdurate, can withstand.

Reaching these aims, we may well begin to think that life is worth living in the Borough of Richmond and that to some appreciable extent our Association has contributed to results so admirable, so really helpful, and so well worth all the efforts we may give for them.

THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

WALTER C. KERR

Ex-President of the Natural Science Association of Staten Island, 1892-99.

LADIES AND GENTLEMEN:

The most important historical fact connected with this association is that it exists and that it is really alive. There is a fine distinction between "existing" and "living." We know that mummies exist, and we have heard of associations organized for various purposes which still retain their form and being, but so far as any one knows they contain no red blood.

The next most important historical fact is that it is better, more prosperous, and more firmly rooted than it has been at any time during the quarter century that it has lived.

Many associations have histories that taper the wrong way. They start with the enthusiasm of the few, extend to the mediocrity of the many, and then decline to the lethargy of the uninterested and uninteresting.

This association represents no lost arts. It has been a perpetuator of constant interest in the things for which it stands. It has always had a small coterie of loyal men, who through its minor ups and downs have been the embodiment of its real strength and existence in a way that cannot but excite the admiration of any one versed in what makes and unmakes such organizations.

When we remember that this little body has held together for twenty-five years today without a fixed home, with but little concrete or physical token of existence, with motives that could scarcely inspire appreciation by the people of things of which they were mostly ignorant, and amid the tremendous pressure of a busy world clamoring for attention to everything under the sun,—it is somewhat remarkable that it should have grown, prospered, and come to its quasi-centennial anniversary in the condition in which the Association appears tonight. The reason is that the real Natural Science Association existed not on paper, nor in a building, nor in any appeal for help, approval or aggrandizement, but it existed primarily in the desire, minds, and motives

of a few men who loved nature, and then in a somewhat greater number who looked with a friendly interest upon such endeavor.

During the year 1881 the desirability of such an association was discussed by several young men who occasionally tramped the Island together. A notebook was put in circulation in which any one who favored this idea was invited to write his name.

When about twenty names had been secured, a call for a meeting was issued, signed by Nathaniel L. Britton, Arthur Hollick, and William T. Davis, to be held at the residence of Mr. Davis, on Saturday evening, November 12, 1881—twenty-five years ago tonight.

This is the piece of paper on which this call was written by Dr. Britton while crossing the bay on one of the ferryboats, which paper Mr. Davis took to the printer as copy for the notice that was issued. This paper, therefore, more than any other token, stands for the organization of this association. It is the original document.

[The paper was here handed out and passed around for inspection.]

Fourteen responded to this call and organized the Natural Science Association of Staten Island, choosing Mr. Sanderson Smith as the first president.

During the next few months meetings were held at the rooms of the Young Men's Catholic Union and in Public School No. 3, New Brighton. In 1882 the Board of Trustees of the Village of New Brighton offered the free use of a large room in the village hall as a meeting place and museum, which was thus occupied for some fourteen years.

In 1896 the Staten Island Academy generously tendered the Association the use of its facilities, and a room was set aside to which the library and museum were transferred. Meetings were then held, sometimes at the Academy, but more often at the residence of various members, as had become the custom since 1892.

During the first four or five years the membership gradually increased, and the meetings were well attended. The interest then somewhat waned until, in 1892, the membership reached the low water mark of thirty-six and the attendance at meetings was very meagre.

About that time it was my pleasure, as a new resident, to learn of the existence of the Association, and I shortly became a member. The first meeting that I attended is well impressed upon my memory. It was on May 14, 1892, the only other member present being the secretary, Arthur Hollick.

Various conditions, which of themselves were of little importance, had operated to cause all or many of the meetings to be poorly attended. In some respects it was perhaps a fortunate accident that at my

first meeting the attendance was so small as to create what might have been to some an adverse influence, whereas under all the circumstances the result was quite the opposite. It was my pleasure to shortly learn the real quality of the Association and with others to perceive its opportunity. Several of us put our heads together to enable the best influences at our command to bring forth the most good. That started, as it were, a new era but no new motive. As president for the succeeding seven years, I followed the affairs of the Association closely, and when the pressure of my many cares required that some be dropped, the active administration was continued by Lester W. Clark and then by Howard R. Bayne, with the result that the membership advanced from 36 in 1892 to 129 in 1906.

Although such an institution deals little with finance, it is admittedly prudent for it to be conveniently solvent. During these twenty-five years, with a limited membership and with dues of only \$3 per annum, this association has published its *Proceedings* monthly without having missed an issue; it has published several pamphlets of considerable size, which have been freely distributed to members and sold to others; it has bound its books, bought cases for its collections, and provided itself with all facilities really needed, and has shown each year a balance which, starting from \$28 in 1883, has grown at an almost uniform rate to \$624 in October, 1906, and, as it never has owed anything, this is about the most continuous record of solvency that I have ever known.

The first number of the *Proceedings* was issued in November, 1883. This publication soon began to attract attention in scientific circles, thus bringing requests for exchange of publications, and by gradual extensions these exchanges came to be made with societies in various parts of the world. Scientific and historical societies, public museums and libraries, and other institutions were eager to exchange their extensive works, often beautiful volumes, for our meagre leaflets dealing with one small locality, thus building up for us a library which has to a considerable extent taxed the resources of the Association for care and maintenance. The number of titles on our exchange list is now about eighty, and this number could be doubled at once if provision could be made to take care of the books thus secured in exchange.

If there is any one thing which characterizes the quality of the men and minds that have made this little institution what it is, it is the demand that has existed for its meagre and often poorly printed pages, sometimes only one page a month and seldom more than four, by these important societies, who were willing to give in exchange the large and often handsomely illustrated volumes previously mentioned. Fortun-

ately, true men of science do not measure by volume, weight, pages, nor attractiveness of appearance, but by the real matter contained.

This little association, however humble its publications, has continually contributed new matter, new facts, new finds, and truly scientific descriptions. The *Proceedings* have not been replete with the paraphrasing of old knowledge. It has not been mere compilation of things compiled before, and dry as such reading may be to some, the fact that it is genuine must be interesting to many.

Gradually there has been accumulated a museum of local fauna and flora, and it is believed to be as complete in its scope as may be found in any locality. Few sections have been so thoroughly explored by men well versed in various branches of science as Staten Island. The material collected has been named and classified, until the natural history and antiquities of the Island are splendidly represented.

In some respects it is an advantage to do such work within an insular locality. Its boundaries are defined. It may have been of great assistance to this association to have so small a territory in which to work. This has led to a thoroughness that might otherwise have been dissipated by attempting too much on broad areas. Some may think that thoroughness may have removed opportunity for future work, and that the rapid increase in settlement will so destroy all traces of primitive nature as to make the field of this association chiefly an oasis that once was. That the tendency is in this direction cannot be doubted, but it takes a long time to destroy nature, sad as it may be that so much is destroyed.

The so-called march of progress seems unnecessarily ruthless, but it is the way of civilized man to destroy everything first and then see what he can do to restore it in some artificial way. The same characteristic of mind that will change the name of Blazing Star to Linoleumville will cut down the forest and upon its ruins build a park with concrete walks.

However, we must take this little area, like the whole world, as we find it and move along with it. Some day this association will have no field in which to work, and then it will be a museum and a library, and its field activity will be a tradition. This time is so far ahead, however, that we can doubtless hold our fiftieth anniversary with the *Proceedings* still reporting finds on the north shore and the south, from the bottoms of the ponds and the tops of the trees—so we will not worry regarding a posterity that has not yet helped or hurt us much.

With the march of progress and the invasion of our repose by municipal affairs, it seems appropriate to make some changes in name and

custom, even if not in the real character of the organization. It has therefore within the past year become the Staten Island Association of Arts and Sciences. This is only a change of name. We have known of other things very dear to us that changed their names, but we loved them none the less. There is no suggestion of anything effeminate in this mere change of name. This organization now begins to take on the complexion of the arts as well as the sciences, which seems to be a wholesome infection resulting from municipal contact. It will not lessen our powers and it may bring some desirable support. Our happiness by any other name would seem as complete, and so it is not of the name, nor of this minor change that we think when we meet tonight to realize that we are brought together by an instinct of twenty-five years in the search for knowledge of what nature and history brought to the locality in which it is our good fortune to live.

One does not like to single out the ones from the many in an association where all are equal and where rank and caste are unknown, but it would seem inappropriate to pass this milestone in our history without mentioning a few of the men who have so constantly and faithfully performed the real work with the real interest which made this association what it is.

First in the inception of the Association, ever constant in its support, and still active in its welfare, are Arthur Hollick, William T. Davis, and Nathaniel L. Britton, each of whom has made a mark in science deeper than our local interests can claim.

Dr. Britton is well known as one of the most active and advanced of botanists, standing in the front rank of his profession; who found everything on Staten Island that the rest of us have not since found, and regarding whom we have but one regret, which is that he has had to largely leave us for the broader field of the Botanical Garden of the Bronx; yet he keeps his picturesque, ever quaint, summer home by the sea at New Dorp.

Dr. Hollick has likewise wandered northward to the bowers of the Bronx by way of Columbia University, yet with no relinquishing of his activity in the Staten Island field. He has been a large contributor and the patient and ever faithful secretary of the Association, who has done what perhaps no one else could or would have done to preserve the integrity of our *Proceedings* under all circumstances for a quarter of a century, and whose scientific writings are too well known elsewhere to require special reference to his large contributions to our pages.

Then "Willie" Davis, whom every one knows as a naturalist—the born naturalist of Staten Island—than whom there never has been and

probably never will be a better all-around observer, discoverer, or describer of things new, rare and interesting.

Among the several founders, there was especially Dr. Carroll, a man of scientific instinct and inspiration who, though not a field worker in the ordinary sense, helped furnish the spirit which founded this institution in the right way.

Then Charles W. Leng, with his beetles, thousands of them, so many that he does not know how many he has; an authority on many orders, a man to whom government officials refer, and to whom they will lend almost anything in the national collection.

Thomas Craig with his microscope, who has long since left us; Gratacap; with a wise eye for geology; Chapin with his birds; Dr. Dowell in botany; Morris and Delavan in local history; and Pepper and Skinner in archeological research; all have brought forth much, while a dozen others have contributed their quota to the active work which has made the Association more than a name. Each in his own way has done something and taken a pleasure in the doing. It is withal a modest effort, but in the aggregate it has given the Association not only a creditable place among its larger fellows, but it has frequently been referred to at various times and in many places as an ideal natural science association, whose methods were worthy of copy.

When I was president, I was several times asked how we held together and how we could keep up the work, especially with what others in their greater localities regarded as our limited opportunities. The answer then, as now, was that this association was the real thing. It was doing serious work of quality and cared not for quantity. Everything was done for the love of it, and men tramped fields and found and discussed things in a true scientific spirit; we were in pleasant social relationship and together played with what was really more than play. This is the right spirit. Cold stones and often living things are not interesting except as they appeal to something within us that becomes interesting. The contemplation of science is a personal attribute, which must lie within those who delve in it, and it is only when it comes out of them and centers about that with which they are in contact that it becomes a real moving thing which creates and perpetuates interest. It is this which gives warrant for the organization whose continuance and prosperity we celebrate tonight.

If time permitted, I would like to tell of many things we have found on this Island, but that leads to a story too long. It may, however, be of passing interest to remark that we have a most exceptional collection of drift fossils, which have a distinct bearing upon the know-

ledge of glacial conditions, and which are now regarded as valuable and may in time become exceedingly valuable in geological records.

We have found new plants and insects that never before were found, not merely on Staten Island, but anywhere in the world. We have found some causes for various scientific phenomena, which are of interest and may be valuable; and we have preserved the flora and fauna of this locality in such a manner as will possess the greatest interest when the hand of civilization has done her work by sweeping from the face of this region all that nature intended it to hold.

Many have an impression that the making of such collections is merely a gratification of curiosity—a desire to collect and see things stand in cases. This is a very poor comprehension of what such collections stand for. Long years hence, centuries, perhaps tens of centuries, there will be races of which we have never heard, who will place a proper value upon the diligence and care which a few men gave to the proper preservation of the history of the rocks, the woods and the fields, and from these records, made in material and in print, deductions will be drawn that will be of the greatest value and most intense interest to those who are called upon to solve problems in which all these things are testimony, sometimes proof.

It is therefore with great pleasure that I speak for this Association of Arts and Sciences, evolved from the old Natural Science Association; to commend to your best consideration and support the perpetuation of this activity throughout the many years during which its opportunity can yet be effective.

When all of the field work shall have been done, it will remain only to preserve and guard the records. There is room for at least another twenty-five years of endeavor, and I take pride in delivering to those who follow, the keeping of the records, the motives, and the sentiment of the past.

LOCAL SCIENTIFIC SOCIETIES: THEIR INFLUENCE AND VALUE

DR. NATHANIEL L. BRITTON

Director of the New York Botanical Garden

Ex-President of the Natural Science Association of Staten Island, 1889-91

LADIES AND GENTLEMEN:

Science has become predominant in human life. All the advances that have been made in civilization are directly or indirectly due to scientific investigation and discovery. Wireless telegraphy; the extraordinary properties of radium; the control of yellow fever and malaria by the demonstration of the fact that these diseases are transmitted from one person to another by certain species of mosquitoes, and the diminution of the number of mosquitoes by sanitary drainage and otherwise; the manufacture of aniline dyes from the waste products of the distillation of coal; the nitrogen-fixing power of certain bacteria and other lowly organized plants by means of which the soil is enriched in plant food; the recognition of the fact that many diseases of both plants and animals are caused by the growth of fungi, bacteria, and other organisms within their tissues or organs; and the conclusion that the plants and animals now living on the earth are all descended from extinct ancestors that lived in previous geological epochs; are a few of the noteworthy and familiar examples of such advances. A multitude of other results, more or less comprehensive, have also been reached and are of enormous importance to mankind. Additional facts of great value are being wrested from nature continually. Any new facts, even such as may seem trivial, may be important, and it is only to the progress of scientific research that we can look for a still higher civilization. This increase in knowledge is due almost entirely to the work of members of scientific societies.

The enormous number of facts and considerations that scientific investigation has brought to the attention of civilized man, has forced a division of knowledge, no one person being able to grasp the whole range of subjects except in a general or superficial manner. Specialization has thus become necessary, and students have been developed along many different lines of thought. This in its turn has required organization, in order that groups of students be formed who by mutual intercourse may consider the various phases of knowledge in their re-

lation to each other. Societies are therefore necessary for efficient work.

Local scientific societies have long been recognized as important factors in public education, serving as permanent repositories of information for public use and as distributors of such information. The principal methods by means of which they accomplish these valuable functions may properly claim our attention.

1. MUSEUMS AND OTHER COLLECTIONS. Inasmuch as the work of local scientific societies relates mainly to natural objects, collections of such objects are indispensable for reference and for record. Portions of these collections are available for the direct information of the public by being placed on view, grouped so as to illustrate facts and theories, and properly labeled; such portions of the collections form the museum. The educational value of museums is coming to be more and more recognized all over the world, so much so indeed that special associations formed for the purpose of considering this feature alone now exist in England, on the continent of Europe, and in the United States. Museums supplement the work of schools, colleges, and universities, and are regarded by many students and teachers as equal in educational value to any one of these three. Other portions of the collections, consisting of specimens too small, too valuable, or too fragile for display, or that would be damaged by exposure to the light, must necessarily be preserved in closed cases, and only such persons as can use them to advantage are given access to them. These reference collections are often of greater scientific value than the museum.

2. LIBRARIES. The books and pamphlets accumulated by local scientific societies are largely such as are unlikely to be found in many other libraries, being naturally selected with special reference to their immediate work. Such libraries come therefore to contain many documents not readily accessible elsewhere, inasmuch as they are largely derived from exchanges with other similar societies in various parts of the world, and in this way valuable information is made available to the community.

3. PUBLICATIONS. The facts observed and conclusions reached by members of societies are supplied to the public by published transactions, proceedings, or under other titles, and they form a very important part of our literature, there being a large number of such societies and many of them publish voluminously. The facts recorded in these publications are not by any means restricted to the immediate recipients of the documents, inasmuch as many of them are copied into journals or newspapers and are cited by other students in various other publications. The *Proceedings of the Natural Science Association of*

Staten Island, which have now been published continuously over a period of about twenty-five years, have been cited and quoted in other works all over the world, and are on file in many of the large public libraries.

4. MEETINGS AND LECTURES. Meetings provide opportunity for the interchange of ideas among the members and their immediate friends, for the discussion of hypotheses and theories, and for the presentation of new facts and discoveries for record in the archives or in publications. Lectures directly reach the public in general and distribute information in an attractive manner, performing an important educational function for the community.

Some of these societies have existed for many years and their influence has been great, but most of them had small beginnings; some have obtained recognition and partial support from cities and towns, while the amount of money privately contributed for their work, in the form of membership dues, gifts and bequests, is collectively very large.

Local scientific societies are able to carry out comprehensive studies of natural phenomena over limited areas, thus accumulating valuable series of facts and observations which societies of broader scope find impossible. Accurate and complete information concerning the natural objects and features of small geographical areas is very important to local communities and often has wider interest or general scientific significance, and the records of natural phenomena that ultimately become obliterated by the building up of towns and villages are very desirable to preserve by descriptions, photographs, drawings or specimens. Our association has always given close attention to this work, and the natural history of Staten Island is perhaps as thoroughly and accurately known as that of any other equal area in the United States, although much yet remains to be done.

The existence of a local society in a community provides the possibility of obtaining data relative to natural objects by reason of some of its members being always available for observing facts that might otherwise be lost to science. In our experience there have been repeated instances of such incidents, one very recent one having already thrown a flood of light on certain features of the character of the vegetation which formed the forests about New York City during the Cretaceous period in geologic time.

The work of such societies supplies the very best training for young people in natural science, their interest being aroused and maintained as in no other way. Nature study is coming to be more and more recognized as an important factor in public education and has already

been made a part of the curriculum of our public schools, where its influence on the children is known to be very good. A relationship between the nature study of the schools and the work of scientific societies and institutions is very desirable to foster and is capable of great development. The study and consideration of natural objects tends toward honesty of thought, purpose, and action, and toward exactness of observation and conclusion.

Local scientific societies are also valuable to the community as agents of general culture, and as an indication to the people that there are things beyond the ordinary affairs of life which may be profitably considered.

THE CITY AND ITS PUBLIC MUSEUMS: WHAT THE CITY SHOULD DO FOR STATEN ISLAND

HON. HERMAN A. METZ
Comptroller of the City of New York

LADIES AND GENTLEMEN:

I am asked to speak to you of the museums of New York and their relations to the City and of the City's duty to them, and especially what the City should do for Staten Island in this connection; but as comptroller of the City I prefer to call your attention to what the City has already done for its museums and leave you to infer what it ought to do for Staten Island.

These museums have recently come to my notice in considering, as a member of the Board of Estimate, the budget for 1907, when they requested for maintenance for next year \$840,100.99 as against \$670,000 appropriated for the purpose for 1906. The names of these institutions, with the appropriations for their maintenance for 1906 and their requests for 1907, are as follows:

	Appropriated 1906	Requests 1907	Increase over 1906
Brooklyn Institute of Arts and Sciences	\$ 80,000.00	\$ 95,000.00	\$ 15,000.00
American Museum of Natural History	175,000.00	205,650.00	30,650.00
Metropolitan Museum of Art	145,000.00	242,718.99	97,718.99
New York Zoological Park .	145,000.00	154,572.00	9,572.00
New York Zoological Society for Aquarium	45,000.00	45,000.00	—
New York Botanical Garden	80,000.00	97,160.00	17,160.00
	<u>\$670,000.00</u>	<u>\$840,100.99</u>	<u>\$170,100.99</u>

The interest on the corporate stock issued for the construction of buildings and other betterments in their behalf is between three hundred and fifty and four hundred thousand dollars annually, which added to maintenance appropriations of about \$800,000 makes the goodly sum of about one million two hundred thousand dollars contributed by the tax-payers annually for this purpose.

It is proper to mention the other side of this matter, which is the

contributions by the friends of the museums for their development, which will appear so far as the amount of money they receive from other sources than the city for the year 1905, and their expenditures therefrom, as shown by the following figures:

	Receipts	Expenditures
	1905	1905
Brooklyn Institute of Arts and Sciences	\$129,651.89	\$98,595.45
American Museum of Natural History	94,650.00	90,019.23
Metropolitan Museum of Art	61,324.23	255,564.30
New York Zoological Park:		
Contributions	27,965.30	
Rents and Privileges	14,816.36	
	<hr/>	
	42,781.66	40,962.23
New York Botanical Garden	34,325.15	33,164.32

And in addition they receive many valuable donations of works of art and other collections to which the public at reasonable times have access.

The arts and sciences in this region seem to have first found their home in Brooklyn, for as early as 1823 some good citizens of that town organized the Brooklyn Apprentices Library Association, which was afterwards changed in name to the Brooklyn Institute of Arts and Sciences, and on the 4th of July, 1825, General Lafayette laid the corner stone of its first building at the junction of Henry and Cranberry streets. In 1835 this institution had outgrown its original quarters, and the City of Brooklyn was prevailed upon to purchase its property and the Institute moved to a new building on Washington Street, then the residential center of the young City of Brooklyn. For fifty years thereafter this institution did noble work in Brooklyn and endeared itself to every lover of science, art, and literature, and during that entire time was sustained through the generosity of its individual patrons. In 1892 the city again took its building, which stood in the way of the Brooklyn Bridge, and leased to the Institute its present site near Prospect Park, expending \$50,000 on the grounds and \$335,500 for the building and equipment. In 1895-6 the legislature authorized the expenditure of \$600,000 for the continuance of the work on the museum buildings and two years later authorized the expenditure of \$10,000 for the care and maintenance of the museum for the year 1897, which Brooklyn appropriated accordingly.

In the old City of New York, now the Borough of Manhattan, for

nearly half a century after Brooklyn started its museum, the arts and sciences would seem to have been confined to a few wealthy individuals who kept collections in their homes, for it was not until 1870, 47 years after Brooklyn started its collections, that the Museum of Natural History was incorporated.

While New York was slow in starting, it made up for lost time by proceeding to business forthwith, and in 1871 the legislature authorized the Commissioner of the Department of Parks to erect buildings for the Museums of Art and Natural History at an aggregate cost, the interest upon which should not exceed \$35,000 for each of said buildings.

Money was six per cent. at the time, and although the plans were elaborate, the legislature and the city fathers no doubt thought that if these gentlemen expected to carry them out some lover of art must go down in his pockets to finish them, but the lovers of art at that time must have been as expert in finance as the most conspicuous of our art connoisseurs of today, for when they agreed to take the museum bonds for two per cent. the town was up against a stock issue of \$3,500,000. And they did not stop at that. The legislature was many times invoked to help the good work at the expense of the City, so that up to date there has been expended for the building and equipment of the American Museum of Natural History, \$4,462,429.86, and for like purposes for the Metropolitan Museum of Art, \$4,559,628.29, or a total of \$9,022,058.15. Of the stock issued for this purpose \$958,000 has been redeemed, and the balance of \$8,064,058.15 is outstanding, on which the city is paying interest averaging 3%, in round figures \$240,000 annually, or \$120,000 annually for each institution.

The legislature of 1873 passed an act providing that out of the appropriation for the maintenance of parks in New York there should be appropriated for the maintenance of museums \$50,000 annually. This was followed by various other acts increasing the annual appropriation from time to time, and appropriations were made accordingly up to the time of consolidation.

With consolidation came the consideration of the amount to be appropriated for all the museums, based on the custom existing in the several boroughs before consolidation, and the embodying in the charter of annual appropriations not exceeding \$250,000 for all three of them, which has since been raised by the legislature to \$400,000 for the Museums of Art and Natural History and \$95,000 for the Brooklyn Institute of Arts and Sciences.

The following are the annual appropriations since consolidation, allowed in the budget of the Park Department by the Board of Estimate

and Apportionment for the maintenance of these institutions:

	Museums of Natural History and Art	Brooklyn Inst. of Arts and Sciences
1898	\$190,000.00	\$20,000.00
1899	190,000.00	46,875.00
1900	215,000.00	46,875.00
1901	225,000.00	55,000.00
1902	285,000.00	60,000.00
1903	310,000.00	70,000.00
1904	310,000.00	70,000.00
1905	310,000.00	75,000.00
1906	320,000.00	80,000.00
1907	320,000.00	95,000.00
	<hr/>	<hr/>
	\$2,675,000.00	\$618,750.00

or a total for maintenance of the three institutions since consolidation of \$3,293,750.00

In the same category are the New York Zoological Park and the New York Botanical Garden in the Bronx and the Aquarium at the Battery.

The New York Zoological Park is maintained on an agreement between the New York Zoological Society and the City, which provides that the City shall furnish "adequate maintenance." By a similar agreement between the same parties, provision is made for appropriation annually of "not less than \$45,000" for the maintenance of the Aquarium.

The New York Botanical Garden is maintained by the City, pursuant to an act of the Legislature and an agreement with the New York Botanical Society.

These two latter institutions have jurisdiction over part of Bronx Park, and since consolidation, in addition to \$125,000 theretofore expended, the City has made the following contributions for improvements to them:

Botanical Garden	\$1,118,135.74
Zoological Park	1,212,857.21
The land cost of Bronx Park was	1,585,459.64
	<hr/>
Adding amount of	\$3,916,452.59
	125,000.00
	<hr/>
Makes a total of	\$4,041,452.59

The City has in addition, since consolidation, made the following annual budget appropriations for the maintenance of the Botanical Garden and the Zoological Park :

	Zoological Park	Botanical Garden
1898	\$ 62,000.00	
1899	30,000.00	\$ 30,000.00
1900	40,000.00	40,000.00
1901	65,000.00	55,000.00
1902	85,000.00	65,000.00
1903	104,965.00	70,000.00
1904	104,965.00	70,000.00
1905	134,965.00	70,000.00
1906	144,965.00	80,000.00
1907	144,965.00	80,000.00
	<hr/> \$916,825.00	<hr/> \$560,000.00

All of these institutions are private corporations controlled by boards of trustees, who administer them according to their own fancy, making the contracts for supplies and fixing the salaries, with the same generosity that characterizes their devotion to the arts, with this single exception, that, in this instance, the City pays the bills. Over eighty per cent of their maintenance is salaries. The City has no voice in the fixing of these salaries, and the employees are not selected from the civil lists made up after examinations in which all the citizens of New York are invited to participate, and owing to the facts that the City makes its contributions to them as it does to the hospitals, they claim exemption from the labor laws of the State applicable to the City and those contracting with it, and I am informed that one of the corporation counsels some years ago advised the City to this effect.

You can form an idea of where we are drifting under these circumstances by a glance at the salaries paid by the City to its Park Commissioners, under whose jurisdiction these museums are, and those paid by the City at the instance of the trustees of these institutions to the directors of the museums:

The salary, Park Commissioner, Manhattan and Richmond	\$ 5,000
The salary, Director American Museum of Natural History	10,000
The salary, Director American Museum of Art	10,000
The salary, Director Aquarium	4,000
The salary, Park Commissioner The Bronx	5,000
The salary, Director Zoological Park	8,000
The salary, Director Botanical Garden.	6,000
The salary, Park Commissioner, Brooklyn	5,000
The salary, Director Brooklyn Inst. of Arts and Sciences (in part)	2,500

The City's relation to these museums originated with the promoters of the museums, operating through the legislature. And while the City has never established any definite policy towards them it has complacently accepted the suggestions of the legislature and the friends of the

museums to such an extent that its obligation for 1907 in their behalf exceed the cost of maintaining Central Park and all the other parks and playgrounds in the boroughs of Manhattan and Richmond; it exceeds the cost of maintaining Prospect Park and the 44 other parks in the boroughs of Brooklyn and Queens, and it exceeds the cost of maintaining the magnificent park and playground system of over four thousand acres in the Borough of The Bronx.

What I have said may invite criticism although it is not so intended. It is given merely as a statement of existing relations which I believe it my duty as a public official to impart to my fellow citizens who have to pay the bills.

I think we will all agree that New York has been generous to her museums, and and I have up to date never heard a complaint against this generosity.

As to the duty of the City to those institutions I have this to say. In the wisdom of the charter-makers they included them as a feature of the park development of the City. While their educational features might entitle them to a higher place in the consideration of the City authorities, which after all should only reflect public sentiment, under existing conditions, like the treatment of the parks themselves, as far as City expenditures are concerned, they should be curtailed until the necessities of the Health and Street Cleaning Departments are met; until every child in the City is provided with seating room in our public schools; until the Police and Fire Departments are amply provided to protect human life and property; and until we have put well under way a system of rapid transit communication, so necessary to every part of our great City.

I do not mean that the museums should be crippled in aid of these ends, but that they should be subordinated to them, and I can conceive of no more patriotic service that the promoters of such institutions having relation to the City can render the community, than by cooperating with the Board of Estimate in this behalf, by a reduction of expenses now, until the paramount necessities of our City are safely provided for.

New York has been generous in a thousand different fields of human endeavor. We contribute more in proportion for all the things that go to make up a great cosmopolitan city than any other community on the face of the globe, and you can rest assured she will at all times contribute her share to the cultivation of the arts and bringing home to her people the elevating sentiments which at all times abide in such surroundings.

NOTE.

The title of the address which Mr. Franklin W. Hooper, Director of the Brooklyn Institute of Arts and Sciences, had expected to deliver, was "Popular Interest in the Arts and Sciences: How it May be Encouraged and Sustained."

In the absence of Mr. Hooper, by reason of a death in his family, his place on the list of speakers was kindly filled, without previous notice or preparation, by Dr. Hermon C. Bumpus, Director of the American Museum of Natural History. No record of this address was secured.

RESOLUTION

ADOPTED BY THE ASSOCIATION, NOVEMBER 17, 1906.

Resolved: that the Committee of Arrangements for the Twenty-fifth Anniversary Dinner, acting in conjunction with the Publication Committee, be directed to prepare and have printed an edition of 1,000 copies of a special memorial number of the Proceedings, to contain the addresses delivered at the dinner, together with such other facts in connection with the occasion as they may consider desirable."

[Abstract from the minutes of the meeting of the Association, held on Saturday, November 17, 1906].

7-22-07
VOL. I.

June-December, 1905.

PART I.

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS,

PUBLICATION COMMITTEE.

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NEW BRIGHTON, N. Y.

[Issued April 10, 1906.]

MEMBERS OF THE BOARD OF TRUSTEES, 1905-1906.

I.—ELECTIVE MEMBERS.

Howard Randolph Bayne, *president*.

Arthur Hollick, *secretary*.

Philip Dowell. William Thompson Davis.

Louis Pope Gratacap. Charles Arthur Ingalls.

John Blake Hillyer. George Scranton Humphrey.

William Armour Johnston. Charles William Leng.

Walter Craig Kerr. George Starr Scofield.

William Hinman Mitchill.

2.—EX-OFFICIO MEMBERS.

The President of the Borough of Richmond,

Hon. George Cromwell.

The District Superintendent of Schools in the Borough of Richmond,

Darwin Long Bardwell.

OFFICERS OF THE ASSOCIATION, 1905-1906.

President—Howard Randolph Bayne.

First Vice-President—William Thompson Davis.

Second Vice-President—William Hinman Mitchill.

Recording Secretary—Arthur Hollick.

Corresponding Secretary—Philip Dowell.

Treasurer—John Blake Hillyer.

Honorary Curator—Charles Arthur Ingalls.

PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION OF ARTS
AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

Vol. I.	June-December, 1905.	Part I.
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SPECIAL MEETING.

SATURDAY, JUNE 3D, 1905.

Meeting held pursuant to the following notice :

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

A meeting of the incorporators will be held at the Staten Island Academy on Saturday evening, June 3d, immediately after the adjournment of the meeting of the Natural Science Association of Staten Island, called for the same place and date.

The purpose of the meeting is to formally adopt the Act of Incorporation, elect officers, and transact such other business as may be necessary to enable the Association to carry out the provisions of the Act of Incorporation.

ARTHUR HOLLICK,
Secretary *pro tem*.

The meeting was called to order by Mr. Howard R. Bayne, the former president of the Natural Science Association.

Twenty-four members were present.

Mr. Bayne and Dr. Arthur Hollick were elected respectively chairman and secretary *pro tem*.

Mr. J. Blake Hillyer and Mr. Charles A. Ingalls were elected respectively treasurer and curator *pro tem*.

The following resolution was adopted :

Resolved: that the Act of Incorporation (Chapter 526 of the Laws of 1905) be and it is hereby accepted and adopted by the incorporators constituting the Staten Island Association of Arts and Sciences.

The following members of the Natural Science Association, who were either elected subsequent to the drafting of the Act of Incorporation, or who were inadvertently omitted from the list of incorporators, were elected members of the Staten Island Association of Arts and Sciences and associated with the incorporators :

Arthur H. Allen, Edward C. Bridgman, Thomas A. Fulton, Charles Humphrey, John Martin, John Rader, Thomas D. Rambaut, Charles E. Trout, and Guillermo F. Ulink.

The following were elected to active membership :

Howard H. Cleaves, Princes Bay.

George T. Egbert, Mariners Harbor.

Dr. Arthur Hollick, for the Committee on Constitution and By-Laws, submitted a preliminary draft of proposed provisions to be included in the same. These were read, discussed, amended and referred back to the committee for revision and formal drafting.

The Chairman, as president *pro tem.* was authorized and requested to take such action on behalf of the Association as he might deem advisable under Section 7 of the Act of Incorporation.

The Treasurer *pro tem.* was authorized to have made a corporate seal, circular in shape, with the name "Staten Island Association of Arts and Sciences" surrounding the date of incorporation.

The Secretary was instructed to issue notices in due time for a regular meeting of the Association on the third Saturday evening in October, 1905.

The meeting then adjourned.

REGULAR MEETING.

SATURDAY, OCTOBER 21ST, 1905.

The meeting was held at the residence of Mr. Read Benedict, West New Brighton.

Twenty-nine members were present.

In the absence of the President Mr. Benedict was elected chairman *pro tem*.

The minutes of the special meeting of June 3d were read and approved.

The following were elected to active membership:

Dr. Louis B. Baker, New Brighton.

James P. Griffin, New Brighton.

Rev. James C. Howard, Stapleton.

Thomas O. Lowe, Tompkinsville.

John W. Wiseman, West New Brighton.

The President, Mr. Howard R. Bayne arrived, and the Chairman *pro tem*. vacated the chair.

Some question having arisen in regard to the status of the temporary officers elected at the special meeting held on June 3d, the following resolution was adopted:

Resolved: that the temporary officers elected on June 3d, 1905, be and they are hereby declared to be the permanent officers of the Association until such time as their successors are elected in accordance with the provisions of any constitution or by-laws that may hereafter be adopted.

The following additional officers were elected:

First Vice-President—William T. Davis.

Second Vice-President—William H. Mitchill.

Corresponding Secretary—Dr. Philip Dowell.

Dr. Arthur Hollick, for the Committee on Constitution and By-Laws, submitted revised copies of the same. The several provisions were read and discussed separately, amended in certain particulars, and adopted under the following resolution:

Resolved: that the Constitution and By-Laws prepared by the committee and amended at this meeting of the Association be and they are hereby adopted, together with such verbal or grammatical changes as the committee may deem advisable for clearness of expression in the final drafting of the same.

Mr. James Chapin exhibited a living specimen of the Jumping Mouse (*Zapus Hudsonius* Zim.) and read the following paper:

NOTES ON A CAPTIVE JUMPING MOUSE.

On August 20th, 1905, while Mr. William T. Davis and I were walking through the woods behind the Moravian Cemetery, at New Dorp, something started to hop away through the plants in front of us. I paid no attention to it, supposing that it was a wood frog, of which we saw very many on that day; but Mr. Davis suspected from its persistent jumping, although it did not clear the tops of low plants in the usual manner, that it might be a jumping mouse. We gave chase and finally succeeded in catching and transferring it to a botanical box. It proved to be a female. Since then I have kept it in a glass tank with a covering of wire netting. I filled the bottom with sand, and put in some twigs and leaves, from which the mouse constructed a sort of nest. Here it sleeps in the daytime, for it feeds entirely at night. I found that it would eat apple, acorns and bread but preferred banana and chestnuts, so banana has been her principal food. After having had the mouse a few days, Mr. H. Lang, of the American Museum of Natural History, took several photographs of her in a box of sticks and leaves. He had great difficulty in keeping the mouse from running down off the sticks to hide in the leaves, but although the box was open on the top and one side she did not attempt to get out. The ordinary way of moving about seems to be by means of short hops, long jumps being made only in case of pursuit or other necessity.

Two other specimens have been exhibited before the Natural Science Association (*Proc. Nat. Sci. Assn. S. I.*, Dec. 12th, 1885, and May 8th, 1897), neither of which I believe was living. It is probably not uncommon on Staten Island but is not often seen because of its nocturnal habits. It stores up food for winter use but sometimes becomes perfectly torpid at that season. Its long tail is said to enable it to keep its balance while making its wonderful leaps, which sometimes exceed eight feet in length.

SPECIMENS EXHIBITED.

Geological material from recent excavations at Smoking Point, near Rossville, presented by Mr. Ira K. Morris, were shown and commented upon by Dr. Arthur Hollick. The material included pieces of crystallized pyrite and lignite, evidently of Cretaceous age. The latter specimen showed well-defined traces of amber in the interstices.

Mr. William T. Davis exhibited a mass of "hard pan," consisting of finely consolidated boulder clay and pebbles, presented by Mr. Samuel R. Brick, Jr., by whom it was collected at the site of Public School No. 16, on Monroe Avenue, Tompkinsville, at a depth of about twelve feet below the street level.

The meeting then adjourned.

REGULAR MEETING.

SATURDAY, NOVEMBER 18TH, 1905.

The meeting was held at the Staten Island Academy.

President Howard R. Bayne in the chair.

Twenty-three members were present.

The minutes of the meeting of October 21st were read and approved.

Mr. Ira K. Morris presented two old time-tables issued in 1819, together with the following paper, which was read by the Secretary:

THE OLD FERRY AND COACH ROUTES BETWEEN NEW YORK AND PHILADELPHIA, VIA STATEN ISLAND.

For a period of several years following the close of the War of 1812—say up to the time of the awful financial panics that came with the commencement of the '30's—there was great activity in public improvements throughout the country, but most especially along the line of Boston, New York, Philadelphia, Baltimore and Washington.

Among the most interesting of the relics of those old days which have come into my possession are two time-tables that give us a very clear idea of how the people traveled at that time. They read as follows:

OLD UNION LINE FOR PHILADELPHIA.

Via New-Brunswick, Princeton, Trenton & Bristol.

Fare Through, \$5.

The Vice-President's Steamboat Nautilus will leave New York every day (Sundays excepted) from Whitehall Wharf,

At 11 A. M.

for Staten Island. From here the passengers will be received without delay into the superior fast sailing Steamboat Bellona, Captain Cornelius Vanderbilt, for Brunswick; from thence in Post Chaises to Trenton, where they lodge, and arrive next morning at 10 o'clock in Philadelphia with the commodious and fast-sailing Steamboat Philadelphia, Captain Jenkins, in time to take the Old Union Line Baltimore Steamboat, which leaves at 12 o'clock every day.

For seats, apply at No. 145 Broadway; No. 5 Courtlandt st., 2d office from Broadway; at the Steamboat Hotel, corner of Washington and

Marketfield sts.; at Messrs. J. & C. Seguiné's, Whitehall; or Capt. De Forest, on board Steamboat Nautilus.

N. B. This line arrives in Brunswick three quarters of an hour before the Olive Branch Line.

JAMES GUYON, jun.	}	Proprietors,
CALEB T. WARD,		New-York.
ROBERT LETSON,		New-Brunswick.
JOHN JOLINE,	}	Princeton.
JOS. B. GROVER,		
JOS. I. THOMPSON,	}	Philadelphia.
DAVID BRENTON,		
WM. B. JAQUES, Agent for Proprietors.		

All goods and baggage at the owners' risk.

POST CHAISE LINE FOR PHILADELPHIA.

Via Staten Island.

Through in one day, and by daylight, with superior accommodations.

The most sure and safe conveyance between the two cities.

A CHAISE will leave the office No. 145 Broadway, a few doors above the City Hall, every morning at 5 o'clock in the Vice-President's Steamboat Nautilus, by way of Staten Island, Woodbridge, New Brunswick, Princeton, Trenton, and Bristol, and arrive in Philadelphia at 5 o'clock the same evening.

The Proprietors of the above line have been particular in selecting good and careful drivers, new carriages, and superior horses, and therefore trust the public will be much gratified after traveling this route.

For seats in the above line, apply at the office No. 145 Broadway, No. 5 Courtlandt-street, at the Steamboat Hotel, corner of Marketfield and Washington-streets, J. & C. Seguiné's, Whitehall, or to Capt. De Forest, on board the Steamboat Nautilus, at Whitehall-slip.

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A Chaise will convey the Passengers to and from their respective Lodgings in each City, free of expense.

JAMES GUYON, jun.	}	Proprietors,
CALEB T. WARD,		New-York.
ROBERT LETSON,		New-Brunswick.
JOHN JOLINE,	}	Princeton.
JOS. B. GROVER,		
JOS. I. THOMPSON,	}	Philadelphia.
DAVID BRENTON,		
E. W. MILLS, Agent for Proprietors.		

July, 1819.

The Vice-President alluded to was Daniel D. Tompkins, who came to reside on Staten Island shortly after the War of 1812. At the time of the establishment of both of the above-mentioned lines of travel he projected the Richmond Turnpike, which runs from the Quarantine (Tompkinsville), across Staten Island and through the little villages of Castleton Corners, Bull's Head and Travisville to the New Blazing Star Ferry (Linoleumville). I have in my possession a letter written by Governor Tompkins to Major James Guyon, Jr., (the great-grandfather of Dr. Frederick E. Clark of New Brighton), giving specific orders as to grades, materials, etc. In a postscript the Governor reminds Mr. Guyon that he has appointed him major of artillery in the New York militia.

Richmond Turnpike was the through thoroughfare over which the famous overland stagecoaches used to rumble in the so-called rapid transit of a century ago. Richmond Turnpike was chartered by act of the Legislature on March 31st, 1815, being Chapter 122 of the 38th session of the New York Legislature, entitled "An Act to incorporate the Richmond Turnpike Company;" this act then provides for the opening of the road through Castleton down to the Sound, and for commissioners, etc.; also, act dated January 21st, 1817, entitled "An Act to amend the act to incorporate the Richmond Turnpike Company," which simply refers to the building of certain portions of the road; also, an act of April 1st, 1824, entitled "An Act to incorporate the President and Directors, Company of the Fulton Bank in the City of New York." The eleventh section provides that this banking company, known as the Fulton Bank, is to be incorporated upon condition that there is to be contributed to the capital stock of the bank the capital stock of the Richmond Turnpike Company, and that the Richmond Turnpike Company is to cease in twenty years after April 1st, 1824; and that ended the existence of the Turnpike Company in the year 1844.

The famous thoroughfare was allowed to go to wreck and ruin in time, and portions of it became unsafe for travel even in the daylight. It became more and more dangerous until the era of good roads redeemed it from end to end. The last of the old milestones that used to guide the people in the old days was secured by the Natural Science Association in 1890 and is now safely housed in our museum. (*Proc. Nat. Sci. Assn. S. I.*, Feb. 13th, 1890).

The ferry at Blazing Star was one of the best up-to-date institutions of its class in the country. An advertisement in the *Richmond* [Staten Island] *Republican*, in 1827, tells in glowing terms of the new ferry-boat employed at that point being propelled by horse-power,—one horse at that! Also, that its enterprising proprietor intended to "keep

right up to the times to show his keen appreciation of the demands of the traveling public." It contained a treading-machine for the horse to work in, and was propelled by side wheels.

Governor Tompkins met with very formidable opposition in his line of boats and stages, by Thomas Gibbons, of Elizabethtown, who ran a boat that became quite famous and was known as the "Mouse of the Mountain." Gibbons named the boat thus because Governor Tompkins, in speaking of the opposition line, said that "the mountain had labored and brought forth a mouse!" Gibbons, however, had too much money at his command for the Governor, who was crippled financially in consequence of expenditures of his personal property in the War of 1812, and the latter died before his plans were fully matured.

During the excitement, which was intense, Gibbons invited a number of public men to dine with him at Nautilus Hall, Tompkinsville, among whom was the Rev. Dr. Van Pelt, pastor of the Port Richmond Reformed Church. Mr. Gibbons incidentally remarked that he wanted to get a good, reliable man to take charge of his boat. Dr. Van Pelt replied that he knew of a young man who he thought would just suit him.

"Who is he?" asked Gibbons.

"Cornelius Vanderbilt," replied the Doctor.

On the following day young Vanderbilt was engaged, and the future millionaire proved true to his trust.

Some time in the latter '40's George Law and his associates became successors of the Richmond Turnpike Company, and they held an interest in it up to about twenty-five years ago. The ferry at Linoleumville has been long since closed, and the tides and time have long since removed the last vestige of the roadway to the water's edge.

Mr. Morris also presented the original "Assignment of Lease by William S. Pendleton and others to The North Shore Staten Island Ferry Company, Dated 22nd Novr., 1862."

Mr. William T. Davis read the following paper:

LOCATION OF LAKE'S ISLAND.

In "Staten Island Names, Ye Olde Names and Nicknames" (*Proc. Nat. Sci. Assn. S. I.*, Vol. v. No. 5, Special No. 21, Mch. 14th, 1896), Lake's Island is referred to, on p. 37, as "the rise in the meadow to the east of Burnt or Dead Man's Island * * *"

Some of the more recent maps of Staten Island, such as the "Atlas of the Borough of Richmond, City of New York. E. Robinson & Co., 1898," and "Map of The Borough of Richmond, Staten Island, New York. Interstate Map Company, Engravers & Publishers, Newark.

N. J., Copyright, 1904," apply the name "Lake's Island," erroneously, I think, to the island of salt meadow at the mouth of Fresh Kill. Mr. E. Brennan, who resides in the old stone house on what I believe to be the true Lake's Island, and whose family has owned the place since 1847, has informed me that in the deed of that date it is called Simonson's Island, but that he has always heard it called Lake's Island by the neighbors.

It is interesting in this connection to recall that Thoreau, in a letter written on Staten Island, on the 21st of July, 1843, says: "Last Sunday I walked over to Lake Island Farm, eight or nine miles from here, where Moses Pritchard lived, and found the present occupant, one Mr. Davenport, formerly from Massachusetts, with three or four men to help him, raising sweet potatoes and tomatoes by the acre. It seemed a cool and pleasant retreat, but a hungry soil. As I was coming away, I took my toll out of the soil in the shape of arrow-heads, which may after all be the surest crop, certainly not affected by drought." Arrow-heads, "the surest crop," are still to be found on the sandy dune as they were in Thoreau's day.

I have questioned Mr. Brennan about Mr. Davenport, and he remembers hearing the family mention his name, so there appears to be but little doubt that Lake's Island is the same place as the "Lake Island Farm" of Thoreau. It is also perfectly plain that tomatoes and sweet potatoes could not be raised on the salt meadow island at the mouth of Fresh Kill. From all of these facts it seems as if the makers of Robinson's Atlas and the "Map of the Borough of Richmond," were in error in calling the island at the mouth of Fresh Kill Lake's Island; they should have called it Burnt Island or by its equally old name Island of Meadow.

SPECIMENS EXHIBITED.

Mr. Davis exhibited rock specimens, and read the following note:

Last August it was found necessary to blast the rock under water at the site of the new ferry slip at St George. Application for specimens was made at the engineer's office, and our fellow member, Mr. Charles E. Trout, kindly furnished those now presented. The rock is a mica schist, like much of that on Manhattan Island. It contains garnets, and in this instance there was encountered a large seam or vein of quartz.

For comparison I have also included a specimen of mica schist collected in November, 1904, from the extreme southern end of the subway excavation at the foot of Whitehall street, near the Manhattan terminus of the ferry.

Dr. Arthur Hollick exhibited specimens of the butternut and read the following note:

Several trees of the butternut (*Juglans cinerea* L.) were recently discovered along the course of the brook which flows near the western boundary of Prohibition Park and forms one of the branches of Palmer's Run.

The occurrence of other trees was noted by Mr. William T. Davis in the vicinity of Sandy Brook, Pleasant Plains (*Proc. Nat. Sci. Assn. S. I.*, Ap. 11th, 1889), and near the Rossville Road (*Ibid.*, Oct. 10th, 1889); and Dr. Samuel Ackerly includes the species in a list of trees published in his "Supplement to the Agriculture of Richmond County" (*Trans. N. Y. State Agric. Soc.* 1843, p. 460). All these records, however, refer to trees in the southern part of the Island, so that the new locality is of interest on account of its apparent isolation. It is not improbable, however, that the butternut, like its near relative the black walnut, was formerly more common here than we now find it to be.

Mr. James Chapin exhibited living specimens of the western chipmunk of Wyoming, *Eutamias quadrivittatus* (Say), together with a skin of the eastern chipmunk in order to show the differences in marking and coloring between the two species.

The Secretary read the following reviews of

RECENT LITERATURE RELATING TO STATEN ISLAND.

I.—"The Origin of Certain Place Names in the United States" (second edition). Henry Gannett. *Bull. U. S. Geol. Survey* No. 258. Pamph., 8vo., pp. 334. Washington, D. C., 1905.

This is a revised edition of the work published under the same title in 1902 as *Bulletin* No. 197, and reviewed in the *Proceedings of the Natural Science Association of Staten Island* of Feb. 14th, 1903. The same criticisms made at that time are applicable now, except that it is still more difficult to understand how such obvious and readily accessible sources of information as are contained in the *Proceedings* could continue to be overlooked, especially as there was issued, since the publication of the previous review, Mr. Wm. T. Davis' "Supplement to Staten Island Names, etc." (*Proc. Nat. Sci. Assn. S. I.*, Vol. viii, No. 25, Special No. 23, Oct. 1903), and a complete file of the *Proceedings* is in the library of the Survey.

This naturally leads to the suspicion that the work has been prosecuted in a somewhat haphazard manner, although in the introduction the author says: "During the compilation of this work a large correspondence was carried on with State and local historical societies, State,

county and township officers, and individuals in all parts of the country ***"

Although the 8,900 or more names listed have been quite carefully scanned the only local ones noted as included are: Staten Island, Richmond County, Kreischerville, Rossville, Tompkinsville, and Ward's Point! How the above mentioned villages came to be selected, and others, such as Stapleton, Mariners Harbor, New Dorp, Linoleumville, Port Richmond, etc., were omitted, is not readily understood; and why only one topographic feature of the Island, represented by the relatively insignificant Ward's Point, should have been honored above all others, it would be interesting to learn.

Several Castletons, Middletowns, Northfields, and a Westfield are listed, but our old townships bearing those names are not included; while among other familiar local names, which however refer to villages or towns elsewhere in the United States, may be noted Clifton, Giffords, Graniteville, New Brighton, Pleasant Plains and St. George.—A. H.

II.—"Report of the New York Bay Pollution Commission to Hon. Frank Wayland Higgins, Governor, March 31, 1905." *State of New York, Senate Document No. 39*, May 1, 1905. Pamph., 8vo., pp. 135 and map. Albany, 1905.

This report, prepared by a commission of which our fellow member Mr. Louis L. Tribus was secretary, includes information that is of considerable economic importance to Staten Island. The proposition to discharge the sewage from an extensive territory in New Jersey by means of a large trunk sewer into the waters of New York Bay, about a mile north of Robbins' Reef lighthouse, was what lead to the appointment of the commission.

Of special interest to Staten Island is the increased pollution of the surrounding waters which would be certain to result and the increased danger of infection of the clam and oyster beds at Gravesend bay and along the south shore of our Island. Bacteriological examinations of water taken at points between the Battery, Coney Island and Raritan Bay, showed the presence of the colon bacillus (*Bacillus coli communis*) quite generally, and wherever this was found in the water it was also found that the shell-fish were similarly polluted. The facts in connection with these analyses and the conclusions derived from them may be found in Appendix 3, under the authorship of Commissioner Geo. A. Soper.

The general conclusion arrived at is that although the present pollution of our adjacent waters is appreciable and measurable, they would not be likely to be polluted to such an extent as to become dangerous

for at least twenty-five years under the existing conditions. If however the proposed sewer system should be put through, it would at once increase the amount of house sewage and storm water drainage, which now enters the bay, by about 50 per cent. and would immediately become a serious menace to the healthfulness and attractiveness of the harbor and adjacent shores.

The "drinking" places, where oysters are kept for a limited time and fattened for the market, are condemned in the most unqualified manner. In regard to the well-known locality at the mouth of Lemon Creek at Princes Bay the report says: "Samples of water and oysters taken from the mouth of this stream have been shown by our analyses to be greatly polluted;" while in regard to another locality the report continues: "Another, and if possible, more dangerous "drinking" ground is situated at Tompkinsville, Staten Island. The stream which furnishes such fresh water as this place affords, flows from a thickly populated area of 2,960 acres. The sewage which is discharged into the Kill von Kull on both sides of this place, within a distance of three miles, exceeds 7,000,000 gallons per 24 hours." There is apparently some discrepancy here in regard to the last named locality being at Tompkinsville. It may be a misprint for Tottenville, or it might refer to some locality on the north shore of the Island.—A. H.

III.—"Report of the Staten Island Committee of the Municipal Art Society," Ernest Flagg, Chairman. *Bull. Municipal Art Soc. N. Y.*, No. 25, Sept., 1905.

This is an octavo leaflet publication of eight pages. The report, which is signed by the Chairman of the Committee, was apparently transmitted to the Society on September 10th and submitted to Borough President George Cromwell by the President of the Society on September 19th.

The report begins with a statement to the effect that "Since its appointment it [the Staten Island Committee] has given its undivided attention to the proposed new street system," and then follows a brief statement of familiar facts in regard to the Island's topographic features, and how they have been modified in many instances by commercial and government works. The necessity for considering a park system in connection with any comprehensive street system is touched upon, and the necessity for a broad general plan of main highways in advance of the details of minor street locations is urged. Special attention is called to the unsuitable location of St. George as a great traffic terminal on account of the topographic features, which require an ascent up

hill and a descent down again in traveling to and fro in any direction, and a marginal street along the entire water front is suggested.

To the residents of Staten Island the report has the familiar ring of numerous other similar reports which have been made from time to time in the past by public officials and bodies and by committees of various associations or by public spirited individuals. Compared with some of these, however, the present report is exceedingly superficial and contains nothing, either in facts or conclusions, that has not been previously presented better elsewhere.—A. H.

IV.—In the British publication *Nature*, Vol. lxxii, May 11th, 1905, pp. 40, 41, may be found a note in relation to the Kreischerville amber, in which the facts are exaggerated in a most amusing manner, viz: "A discovery of the occurrence of this substance in large masses has been recently made in the Cretaceous deposits of Kreischerville, Staten Island, N. Y. The amber, which is being extensively worked for commercial purposes, occurs in a bed containing layers of vegetable debris * * * " etc.

This is a striking example of the well known fact that the importance of any discovery or incident is usually exaggerated in direct proportion to the distance from the point of origin, but it is somewhat strange that a dignified and presumably accurate scientific publication like *Nature* should not have taken the trouble to ascertain the facts and to state them correctly.—A. H.

The meeting then adjourned.

REGULAR MEETING.

SATURDAY, DECEMBER 16TH, 1905.

The meeting was held at the residence of Mr. Howard R. Bayne, New Brighton.

President Howard R. Bayne in the chair.

Twenty members were present.

The minutes of the meeting of November 18th were read and approved.

The President gave a verbal report on the business transacted by the Board of Trustees since the last meeting of the Association.

Mr. William T. Davis exhibited specimens of pine and spruce cones, partially and completely denuded of scales by squirrels, and read the following paper:

NOTES ON THE RED SQUIRREL.

In the pine barrens of New Jersey, at Lakehurst, there are no nut trees, and the red squirrels that inhabit the woods do not likely know the taste of hickory nuts or chestnuts. The "Chickaree" is, however, a general feeder, eating a great variety of seeds, buds, fungi, fruit, insects, birds' eggs, etc., and in the pine barrens he finds many things to his liking. There is also one kind of food ever handy in winter, namely the cones of the pines, containing the rather small seeds. Thoreau says of the task of opening these cones: "If you would be convinced how differently armed the squirrel is naturally for dealing with pitch pine cones, just try to get one open with your teeth. He who extracts the seeds from a single closed cone, with the aid of a knife, will be constrained to confess that the squirrel earns his dinner. He has the key to this conical and spiny chest of many apartments. He sits on a post vibrating his tail, and twirls it as a plaything." Thoreau has a still more pleasing account of this proceeding, under date of Feb. 21, 1861, to be found in the volume entitled "Winter."

Small heaps of these dismembered pine cones are to be found quite often at Lakehurst, usually at the base of some pine tree, but last spring a remarkable collection was discovered from which the material exhibited was secured. The squirrel had selected a pitch pine bearing many cones containing good seeds and had bitten off the small limbs to which the cones were attached so that they fell to the ground. Then the cones were removed from the branches and carried to the base of

the tree and opened. The ground beneath the pine tree was strewn so thickly with the branches that it had a green appearance, and at the base of the tree there was about half a bushel of cone remains.

Squirrels eat the seeds not only of our native pines, but they also open the long cones of the Norway spruce. Mr. Alanson Skinner and I found some of these cones at Ramapo, N. Y., in April, 1904. When the scales have been removed by the squirrels the spiral arrangement is much better shown in these cones than in those of the pitch pine.

In many localities red squirrels are extremely self assertive and may be seen and heard almost constantly, but in the pine barrens about Lakehurst I have seen but few, and they act quite differently. Here on Staten Island we have no wild red squirrels, although gray squirrels are fairly numerous. The red squirrel is also said not to occur on Long Island.

In "American Animals," by Witmer Stone and Wm. E. Cram, published in 1902, occurs the following: "But as early as July, while the young squirrels have still to be watched over and looked after, the industrious red squirrels begin cutting off the green cones of the white pine and work early and late burying them, half a dozen in a place, under the pine needles, to be dug up in the winter and early spring, and opened for the seeds they contain." The young of red squirrels, and of our other species, are often born much later than July, as was pointed out in the *Proceedings of the Natural Science Association of Staten Island* of January 9th, 1886,—that is to say, our native squirrels have often both spring and fall or late summer broods of young.

Mr. Davis also explained and demonstrated a simple and practical method of temporarily binding pamphlets and read the following note:

A PRACTICAL METHOD OF TYING PAMPHLETS IN BUNDLES.

With the month of December most of the botanical, entomological and other natural history journals end their volumes for the current year, and it becomes necessary to tie the separate numbers together until such time as they can be sent to the binder. Many of the journals are of but few pages, and several years are usually bound together in a single volume. Meanwhile it often becomes necessary to consult a particular article, and when tied together in the usual way the numbers are not conveniently reached. It may be found, however, that twelve numbers of the *Canadian Entomologist*, for instance, can be securely tied together by winding a fine strong string four times about them

lengthwise, just inside the staples with which the pages are secured. While the volume will of course not lie open, it can nevertheless be easily consulted without untying the string. This method has been followed by Mr. Louis H. Joutel for several years, and I have also found it most practical and convenient.

Dr. Arthur Hollick exhibited specimens of Triassic sandstone and read the following paper:

A NEWLY DISCOVERED OUTCROP OF TRIASSIC ROCK ON STATEN ISLAND.

During the prosecution of recent investigations on the geology of the Island in the vicinity of Kreischerville I accidentally discovered a hitherto unreported outcrop of Triassic rock, on the east side of Sand Lane, near Bogardus' Corners. The outcrop is well defined, and I ascertained by inquiry that it had been worked as a quarry by the Kreischers some years ago, in order to obtain material for mixing with fire clay in the manufacture of mottled brick for ornamental building purposes. I was informed that about one hundred tons of the rock had been taken from this outcrop.

The rock is red shaly sandstone, thinly bedded, and presenting evidence of having been squeezed or crushed, probably by ice action. Its presence at this location, at an elevation of about 140 feet above tide, is somewhat remarkable; and its discovery was entirely unexpected, as it indicates that the topography of the region is not wholly due, as was formerly supposed, to eroded Cretaceous strata and Drift deposits, but that it is due, at least in part, to "bosses" or ridges of older rock.

That Triassic rock underlies the Cretaceous clays of Staten Island and New Jersey at lower levels, has long been known, but its occurrence as an "inlier," surrounded by Cretaceous deposits, was an unlooked-for feature and materially adds to our knowledge of the extent and location of the formation on the Island and the amount of erosion to which it was subjected before the Cretaceous deposits were laid down.

Previous visible evidence in regard to the local presence of rocks of Triassic age has been confined to the trap ridge, extending from Port Richmond to Linoleumville, and the adjacent area to the northwest, in the vicinity of Mariners' Harbor and Arlington. The outcrop in this region was first noted and described in 1843 by Mr. Wm. W. Mather (Geol. N. Y., Pt. I. Geol. 1st Geol. Dist., Chap. iv, Upper Secondary System, Redsandstone Division, p. 285), where he says: "In Richmond county (Staten island) the red sandstone occupies but a

small area where it can be observed; but from the observations made by Prof. H. D. Rodgers and myself, it is believed to range from between Bergen point and Shooter's island, south-southwestwardly, to the Freshkill marshes. It is generally covered by soil, drift deposits, and the sand and clay beds. It may be seen at very low tide, on the shore, about southwest of Bergen Point. It is the slaty, micaceous, fissile, red sandstone and shale."

On p. 294 he mentions "the tracks of birds and animals found on the sandstone in quarrying [in the Connecticut River valley]" and remarks, in a footnote: "I have seen no tracks on the red sandstone of Rockland and Richmond counties, but they may very possibly be found there."

A visit to the locality mentioned by Mr. Mather on the shore at Mariners' Harbor, was made by me in 1889 and described in the *Proceedings of the Natural Science Association of Staten Island* for April 11th of that year. Since then the growth of the community has obliterated all traces of the outcrop at that time exposed, but we have specimens from it in our collection.

Shortly afterwards Triassic shale was found exposed in the railroad cutting just beyond Arlington station, and the discovery was recorded in the *Proceedings* of Oct. 10th, 1889. The same rock is also known to be near the surface at other localities in the vicinity, as evidenced by the fact that it was struck in a well boring at the Elizabethport ferry landing, near Old Place, at a depth of 45 ft., as noted by Mr. Wm. T. Davis in the *Proceedings* of June 12th, 1897.

Boulders, pebbles, and finer particles of Triassic sandstone and shale are the commonest constituents of our Drift deposits, giving to them the prevailing red color which characterizes most of the surface soil of the Island, but this material was almost entirely derived from the New Jersey outcrops. Some of our finest specimens of glaciated boulders and pebbles are of this kind of rock.

The Secretary read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND.

"The Normal Distribution of Chlorine in the Natural Waters of New York and New England." Daniel D. Jackson. *U. S. Geol. Surv., Water-Supply and Irrigation Paper* No. 144. Pamph., 8vo. pp. 31, pls. i-v. Washington, D. C., 1905.

This contribution deals especially with the normal amount of chlorine in the reservoir, pond, lake, stream, well and spring waters of the region.

If the waters affected by the salt deposits in the western part of New York State be disregarded, it has been found that in the coast States the chlorine in the natural waters is practically all brought in by the sea winds and that the amount constantly diminishes as the distance from the coast increases. By connecting the localities where analyses of the waters show equal amounts of chlorine a series of isochlors are established, which on a map of the region are indicated by a series of lines, roughly following the contours of the coast line and located further and further apart as the distance from the coast line increases. When we know in this way the normal amount of chlorine which should be present in the water at any locality, any excess which may be found is a clear indication of some local conditions which cause the excess, and the identification of such local conditions is often of the highest importance, for the reason that an excess of chlorine may mean organic pollution of the water and be an indication that it is unfit for domestic purposes.

The mere presence of an excess of chlorine, however, does not necessarily indicate such pollution but may be due to the presence of natural salt deposits in the ground or to seepage from the ocean, so that each locality should be made the subject of an independent investigation.

By consulting the isochlor map of New York (pl. v) it may be seen that Staten Island is located within isochlor 6.0, or in other words that the normal amount of chlorine in our natural waters should be six parts per million. On page 30 are given the results obtained from analyses of several Staten Island waters, as follows:

"Clifton, water supply.....	6.0
Richmond Turnpike station, Crystal Water Supply Company	6.2
Stapleton, water supply.....	6.0
Tottenville, water supply.....	6.0"

These results are of interest as indicating that so far as the water from these sources of supply is concerned the amount of chlorine present is normal or so slightly in excess that the excess may be disregarded.

It is unfortunate that analyses of the water from the Staten Island Water Supply Co. were not included, as these would have afforded interesting comparisons. We are, however, able to quote several from other previous reports, a number of which have been given in papers read before the Natural Science Association of Staten Island from time to time and printed in the *Proceedings*, Vol. iv, Feb. 9, 1895, p. 61; Vol. viii, Dec. 13, 1902, p. 45. From the above mentioned sources of information the following data have been abstracted:

Staten Island Water Supply Co.: Chlorine, parts per million.

Sample taken June 30, 1883	Sample taken Oct., 1893	Sample taken Nov. 19, 1902
8.79	13.05	392.00

These analyses show not only such an astonishing excess over the normal but also such a progressive increase in the actual amount of the chlorine that some local source of contamination is evident. This is probably due to the location of the wells near tide water, at the West New Brighton pumping station, as previously suggested in the papers quoted.

It may also be pertinent to recall that analyses of the Crystal Water Co.'s supply and that of Tottenville, given in the same papers, show a larger amount of chlorine than those given in the work under review; and as the former were made in the Municipal laboratory they may be regarded as authoritative.

Finally we may incidentally recall the results of analyses of Silver Lake water, recorded in the *Proceedings* of February 13th, 1904, as follows:

Sample collected July 17, 1903.	Chlorine, parts per million	12.425
" " Nov. 20, " " " "	" " " "	8.000
" " Dec. 7, " " " "	" " " "	8.000

In this case the indicated contamination can not be due to salt water seepage but must be regarded as evidence of organic pollution, due to nearby habitations.

This work is of great local interest and importance, as it provides us with an official standard, with which our local waters may be compared and from which definite conclusions in regard to them may be deduced. It also comes at a peculiarly opportune time, when we are discussing and planning for an increase of our public water supply system.—A. H.

NOTES AND COMMENTS.

Rev. Arthur H. Allen remarked on a colony of English starlings inhabiting the steeple of the Reformed Church on Tompkins Ave., Tompkinsville. The identity of these birds is not generally recognized, and they are popularly referred to as robins, blackbirds, etc.

Dr. Hollick referred to a paper on other local colonies of the birds by Mr. W. P. Heineken, in the *Proceedings* of February 12th, 1898.

Mr. James Chapin read extracts from a paper by Miss M. Cline, en-

titled "The Principles of Bird Flight," recently presented before the New York Academy of Sciences, and commented upon some of the curious statements of facts and the remarkable théories advanced in it. The paper is printed for private circulation as an octavo pamphlet of fifteen pages, with a portrait of the authoress, and bears the imprint of the Free Press Publishing Co. of Easton, Pa.

The meeting then adjourned.

VOL. I. January-May, 1906. PART II.

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS,
PUBLICATION COMMITTEE.

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NEW BRIGHTON, N. Y.

[Issued July 9, 1906.]



MEMBERS OF THE BOARD OF TRUSTEES, 1906-1907.

I.—ELECTIVE MEMBERS.

Howard Randolph Bayne, *president*.

Arthur Hollick, *secretary*.

Philip Dowell.	William Thompson Davis.
Daniel Delehanty.	Charles Arthur Ingalls.
John Blake Hillyer.	George Scranton Humphrey.
William Armour Johnston.	Charles William Leng.
Samuel Alexander Henszey.	John DeMorgan.
William Hinman Mitchill.	

II.—EX-OFFICIO MEMBERS.

The President of the Borough of Richmond,

Hon. George Cromwell.

The District Superintendent of Schools in the Borough of Richmond,

Darwin Long Bardwell.

OFFICERS OF THE ASSOCIATION, 1906-1907.

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First Vice-President—William Thompson Davis.

Second Vice-President—William Hinman Mitchill.

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

Vol. I.	January-May, 1906.	Part II.
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REGULAR MEETING.

JANUARY 20TH, 1906.

The meeting was held at the residence of Mr. Lester W. Clark, Sr., New Brighton.

President Howard R. Bayne in the chair.

Twenty-six members were present.

The minutes of the meeting of December 16th, 1906, were read and approved.

The following were elected to active membership:

Thomas A. Bräniff, Tompkinsville.

Timothy F. Donovan, West New Brighton.

Richard Fair, Stapleton.

Dr. Arthur Hollick exhibited specimens of charred wood, lignite, and amber, from the Cretaceous deposits at Kreischerville, and read the following papers:

A FOSSIL FOREST FIRE.

At our meeting of January 21st, 1905, in a paper entitled "Additional Notes on the Occurrence of Amber at Kreischerville" (*Proc. Nat. Sci. Assn. S. I.*, vol. ix, 1905, pp. 35, 36), I referred briefly to the presence of charred wood, associated with the lignites and amber, in the following words: "Another exceedingly interesting phenomenon is

the occurrence of charred wood * * * evidently produced by the direct effect of fire * * *. As man was not in existence at that period in the earth's history the origin of the fire must have been due to some natural agency, and as there is no indication of volcanic disturbances we may assume, in the absence of any more likely theory, that it was due to lightning."

This explanation however was recognized as not entirely satisfactory, for the reason that charred wood is known to occur in deposits of approximately the same geologic age at other widely separated localities, and the theory would therefore imply that there was at that period either an unusual number of such fires from this cause, or else a single conflagration extending over an area of many hundreds of square miles.

The presence of charred wood in connection with the Cretaceous deposits of Maryland was incidentally mentioned by G. Troost in the early part of the last century, in an article entitled "Description of a Variety of Amber and of a Fossil Substance supposed to be the Nest of an Insect, discovered at Cape Sable, Magothy River, Anne Arundel County, Maryland" (*Am. Journ. Sci.*, vol. iii, 1821, pp. 8-15,) in which he says, on page 9: "This lignite seems to be formed of three varieties of wood, or rather the wood has undergone three different changes, some pieces of it being entirely charred."

I have here certain specimens collected at Kreischerville, which include large pieces of lignite charred on the outside only and other smaller fragments completely charred throughout. These latter occur in greatest abundance in connection with layers or seams of yellowish sandy clay. The prevailing colors of the Cretaceous sands and clays throughout this locality are white and gray, while the yellow layers are of quite limited extent and appear to have been burned or baked. It seems therefore reasonable to infer, from this association of materials, that the charred wood was not deposited with the clay in the condition of charred wood, but that it was fresh material at the time of deposition and was subsequently burned in place, thus baking the enclosing clay.

At the time when the material was discovered, and indeed until only a few days ago, no other probable cause of the fire than lightning had occurred to me; but in a recent article by D. P. Penhallow, entitled "A Blazing Beach" (*Science*, vol. xxii, Dec. 15, 1905, pp. 794-796), the author describes a phenomenon which supplies an explanation not only reasonable but probable and apparently conclusive. In order to thoroughly appreciate the significance of this article and its application to the Kreischerville material and environment it should be read ver-

batim, but the following abstract includes the principal facts of interest in this connection:

On Friday evening, September 1st, 1905, flames were seen to arise from the surface of the beach and adjacent waters at Kittery Point, Maine. The flames rose to a height of about a foot and lasted about an hour. Incidentally an earthquake shock had been felt the day before. The conflagration was confined to that portion of the beach exposed at low water. Here the surface was found to be fine white sand to a depth of about an inch, below which was about six inches of sand filled with various kinds of organic debris, in regard to which the author says: "Moreover, this layer was perfectly black, and when washed it exhibited very small, carbonized fragments of *Zostera* [eel grass] and other marine plants, fragments of wood with a distinct surface charring, etc."

His explanation of the conflagration is that the decaying vegetation gave rise, as such material is well known to do in the marshes, to sulphuretted, carburetted and phosphuretted hydrogen gases. The earthquake jar of the previous day liberated these gases, which ignited by spontaneous combustion and started the conflagration, which continued until the gases were consumed.

Similar phenomena, under the names of "Will o' the wisp," "*ignis fatuus*," etc. are of not uncommon occurrence in marshy districts, where decaying vegetation has accumulated, and the author concludes with the suggestive remark "that the possibility of such combustion on a rather large scale offers a most reasonable explanation of many forest fires, the origin of which it has hitherto been impossible to account for in a satisfactory manner."

A careful study of the Kreischerville deposits indicates very clearly that the original conditions of deposition must have been strikingly similar to those described as existing at the Kittery Point beach. The layers of vegetable debris and sand, intercalated in the clays, are comparable to the sandy layer of black organic debris in the beach, and it is reasonable to infer that wherever such conditions prevail similar phenomena of combustion may occur.

INSECT BORINGS IN CRETACEOUS LIGNITE FROM KREISCHERVILLE.

Since I last reported on the Kreischerville lignites a large account of additional material has been collected, some specimens of which show the presence of insect borings. I did not feel certain in regard to the nature of these markings on the lignites, so the specimens were turned

over to Mr. William T. Davis, who submitted them to Mr. L. H. Joutel of the American Museum of Natural History and to Mr. E. P. Felt, State Entomologist. They both agreed that the markings represented insect borings of some kind, but did not care to commit themselves any further.

Upon looking into the matter I soon ascertained that the literature relating to fossil insects is quite extensive, and that it would require considerable labor to ascertain whether it contains any reference to borings identical with ours, but those who are interested in the subject may find a popular article, signed "M. G.," entitled "Les Perforations des Bois Fossiles" in *La Nature*, vol. vi, 1878, p. 112, figs. 1-6, in which are illustrations of borings in fossil coniferous wood, by coleopterous insects regarded as probably belonging to the genera *Tomicus* or *Bostrichus*, some of which are not unlike our specimens. Mr. Samuel H. Scudder has also described several similar specimens from Canada. (*Cont. Canadian Palaeont.*, vol. ii¹, 1895, pp. 27-56, pls. ii, iii, and *Ibid.*, ii², 1900, pp. 67-92, pls. vi-xv). In the first mentioned contribution the author describes and figures a fragment of an elytron under the name *Hylobites cretaceus*, from the Pierre shales of northwest Manitoba, and says: "This is the second Cretaceous insect that has been discovered in North America, the first being a *Corydalites* [*S. secundus* Scud.] from the Laramie beds of Colorado." The former is a coleopterid, the latter a neuropterid.

We are not yet able to report what kind of an insect it was that made the borings in the Kreischerville lignites, but the rarity of any indications of Cretaceous insects in America causes the discovery to be of interest and worthy of record.

Incidentally it may also be mentioned that nearly all of the Kreischerville lignites thus far critically examined prove to be coniferous, and that most of the reported instances of fossil insect borings appear to be in wood of that class.

Mr. William T. Davis exhibited specimens of the *Catalpa* Sphinx and its caterpillars collected at Lakehurst, N. J., and read the following paper:

THE CATALPA SPHIX.

Since 1899 the *Catalpa* Sphinx moth (*Ceratomia catalpæ* Bdv.) has been reported from widely different parts of New Jersey, but as yet it has not been detected on Staten Island. The caterpillars are gregarious, and as the name indicates are to be found on *Catalpa* trees,

which they often completely defoliate. Specimens were found last summer at Jamesburg, N. J., which is less than fifteen miles from the western end of our Island. Though found so widely distributed in New Jersey, it has not been discovered, as far as I am aware, nearer to the ocean than Lakehurst, where it has been plentiful for a number of years. It is hoped that if the insect be found on the Island the matter will be reported, as the spread of these species northward and eastward is of some interest. Several accounts of the *Catalpa Sphinx* by Prof. Smith are to be found in the reports of the Entomological Department of the New Jersey Agricultural College Experiment Station; and in *Entomological News* for October, 1905, Dr. Holland gives an interesting report upon the spread in recent years of this insect in southern Indiana and the damage it causes to *Catalpa* trees.

SPECIMENS EXHIBITED.

Mr. Stafford C. Edwards exhibited specimens of bird-nest fungi, collected on the Island, including the species *Granularia pulvinata* (Schw.) Kuntze and *Cyathus striatus* (Huds.) Hoffm.

Mr. Howard R. Bayne exhibited specimens of the stem of poison ivy (*Rhus radicans* L.), showing the aerial rootlets and eccentric position of the pith.

Mr. Leavitt C. Parsons presented a copy of the *Staten Islander* dated September 11th, 1847.

Mr. William H. Mitchill presented a fac simile copy of *Frank Leslie's Illustrated Newspaper* dated December 15th, 1855, containing a description and picture of Sailors Snug Harbor.

Mr. Alanson Skinner exhibited wampum, a wooden mask, a spirally feathered arrow shaft, and other Iroquois Indian relics, and commented upon the same.

NOTES AND COMMENTS.

Mr. William T. Davis remarked upon the recent agitation in connection with the proposed public tuberculosis hospital on the Island, and read an extract from Clute's "Annals of Staten Island," published in 1877, in which the climate of the Island is referred to as "celebrated for its salubrity, except for affections of the lungs and throat."

Mr. James Chapin stated that a number of individuals of the Great Northern Shrike (*Lanius borealis* Vieill.) had been recently seen on

the Island and several specimens obtained. The only previous records in regard to the local occurrence of the species are by Dr. Arthur Hollick and Mr. William T. Davis in the *Proceedings of the Natural Science Association of Staten Island* of April 13th, 1901.

The Secretary read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND.

"The Production of Precious Stones in 1904." George F. Kunz. Pamph., 8vo., pp. 120. Washington, D. C., 1905. Extr. *Mineral Resources U. S.*, 1904. David T. Day, Chief, Divn. Mining and Mineral Resources, U. S. Geol. Surv.

On pp. 80-82, under the heading "Amber. New York," is an account of the Kreischerville amber discovery in 1904, together with a very full and accurate description of the conditions under which the amber occurs, its characters, the fossil plant remains found associated with it, and a brief account of the known occurrence of amber elsewhere in the eastern United States.

The author remarks that "Cretaceous amber is somewhat rare, and this occurrence is of much interest * * * The specimens obtained are in the museum of the New York Botanical Garden and also in that of the Staten Island Natural Science Association," and for the information of those who are not acquainted with the locality the following explicit description is given:

"Kreischerville, Staten Island (borough of Richmond, New York City) * * * is situated on the shore of Staten Island Sound or Arthur Kill, near the extreme southwestern end of the Island and distant about $2\frac{1}{2}$ miles from Richmond Valley station on the Staten Island Railway, about 23 miles from New York city hall."

A somewhat peculiar circumstance which I am unable to understand or explain in connection with this pamphlet, is that although the title page designates it as "Extract from Mineral Resources of the United States, Calendar Year 1904," an examination of the latter publication shows that the "Extract" is much more extended than the original, in which the amber article is condensed to a brief paragraph on p. 960.

—A. H.

The meeting then adjourned.

REGULAR MEETING.

FEBRUARY 17TH, 1906.

The meeting was held at the residence of Mr. Montague Lessler, Tompkinsville.

President Howard R. Bayne in the chair.

Twenty-three members were present.

The minutes of the meeting of January 20, 1906, were read and approved.

Mr. Montague Lessler moved the following resolution, which was unanimously adopted:

Resolved: that the Staten Island Association of Arts and Sciences offer a prize of ten dollars annually for work in natural science, open only to pupils in the Curtis High School under such conditions as may be mutually agreed upon by the trustees of this Association and the authorities of the School.

The following were elected to active membership:

George Boynton, New Brighton.

Kintzing P. Emmons, New Brighton.

Gugy Æ Irving, New Brighton.

Louis J. Rabbage, Port Richmond.

Mr. William T. Davis exhibited specimens and read the following paper:

BOTANICAL NOTES.

Additions to the Local Flora.

Picea excelsa L. A number of seedling spruces have been found growing in the woods in various parts of our Island which appear to belong to this species. The oft repeated burning of the woods has, however, prevented the trees from attaining any considerable size. Specimens have been found on Richmond Hill, at two stations near Four Corners, and last year Dr. Philip Dowell and I found several on Ocean Terrace and one at Lyster Pond near Valley Forge.

Commelina communis L. This introduced plant is a troublesome

weed in some shady gardens. It has been found at New Brighton, Clifton, Egbertville and Gifford's Lane.

Asclepias incarnata L. A single plant of this milkweed was found at Bull's Head last August.

New Localities.

Pinus Virginiana Mill. For many years a large pine of this species stood in the woods on the westerly side of the Todt Hill Road not far from Four Corners. It is now dead and only part of the trunk remains. On the opposite side of the road there is a living specimen of considerable size that has not heretofore been reported.

Quercus nana Marsh. A single specimen of this scrub oak was observed last September by Dr. Dowell, while we were examining the hybrid oaks at Richmond Valley, near to which it grows. The other known station for the species on our Island is at Watchogue.

Duchesnea Indica (Andr.) Focke. The Indian strawberry grows near the Amboy Road and Beach Ave., Richmond Valley.

Tilia Americana L. A number of young lindens stand in the woods on the easterly side of South Ave. near Lambert's Lane, Mariners Harbor.

Galium tinctorium L. This species of bedstraw was found near Richmond in June, 1900. It is probably the same as that listed in the local flora as "*Galium trifidum* L., var. *latifolium* Torr.—Clifton, S. I., 1870. (Wm. H. Leggett)."

Sericocarpus linifolius L. This white-topped aster has been reported from Watchogue and Richmond Valley. At Watchogue but one plant was found, and at Richmond Valley it was not abundant. On "Egypt" Meadow Island back of Midland Beach it is, however, quite common.

Taraxacum erythrospermum Andr. The red-seeded dandelion has been found in several places on the Island. In addition to the localities reported in the *Proceedings of the Natural Science Association* for February, 1902, it has been found on top of an outcrop of serpentine rock on the side of Richmond Hill, and on the 14th of last May Dr. Dowell and I discovered numerous plants near the old lane that leads to the Billopp House at Tottenville.

Mr. James Chapin exhibited stuffed specimens of the Ipswich sparrow and read the following paper:

OCCURRENCE OF THE IPSWICH SPARROW ON STATEN ISLAND.

The Ipswich sparrow *Passerculus princeps* Maynard is only

known to breed on Sable Island, about 90 miles off the coast of Nova Scotia, but it winters southward along the Atlantic coast to Virginia and Georgia, thus including Staten Island in its winter range; although, so far as I am aware, its occurrence here has not been heretofore reported.

On the beach between New Dorp and Great Kills I observed single individuals of this species on January 14th and February 11th and 22nd, 1905, and two, or possibly three others on February 12th, 1906. It appears therefore to occur quite regularly at this locality, and I should suppose it might also be found all along the strip of beach extending from South Beach to Great Kills, and possibly between Great Kills and Tottenville, although this is less likely.

SPECIMENS EXHIBITED.

Mr. William T. Davis exhibited a specimen of gneiss containing stilbite, obtained from the Manhattan end of the Brooklyn tunnel at the Battery and identified by Mr. Louis P. Gratacap.

Mr. Davis also exhibited a specimen of *Papilio troilus* L. and a crab spider. The *Papilio* was found dead with the living spider attached to it. The latter had probably caused the death of the former.

Mr. James Chapin exhibited photographs of the western chipmunk, *Eutamias quadrivittatus* (Say), from Medicine Bow, Wyoming, taken from the living specimens shown at the November meeting of the Association.

Mr. Alanson Skinner exhibited two grooved stone axes found at Chelsea and an arrow point from Mariners Harbor, where a few human bones, presumably of Indians, were also found.

Mr. Skinner also exhibited a photograph of an excavated Indian grave in Chautauqua Co.

Dr. Arthur Hollick exhibited a specimen of dolomite, obtained by Mr. Llewellyn W. Freeman in a street excavation in New Brighton, which at first was thought might have been in place where found, but which proved to be an old piece of masonry, as indicated by adhering particles of mortar.

Dr. Hollick also exhibited a piece of marble, transmitted by Mr. Ira K. Morris, which had been found associated with Cretaceous lignite and kaolin at Smoking Point, near Rossville, and which proved on careful examination to be a fragment of an artificially cut slab.

The Secretary read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND.

In the New York *Evening Telegram* of February 17th, 1906, is an article entitled "Amber Found in Goodly Quantity," in which the amber deposits at Kreischerville are described. The article was apparently inspired by a recent brief paragraph by Dr. Arthur Hollick, entitled "Origin of the Amber Found on Staten Island," (*Journ. N. Y. Bot. Gard.*, vol. vii, pp. 11, 12. 1906), which includes a statement to the effect that some of the Kreischerville lignites had been examined microscopically and identified as belonging to the genera *Sequoia* and *Araucarioxylon*.—A. H.

The meeting then adjourned.

REGULAR MEETING.

MARCH 17th, 1906.

The meeting was held at the residence of Mr. William H. Mitchell, Port Richmond.

President Howard R. Bayne in the chair.

Eighteen members were present.

The minutes of the meeting of February 17th, 1906, were read and approved.

The Secretary called attention to a recently issued circular signed by the local secretary of the American Association for the Advancement of Science, announcing that the next meeting of the association would be held in New York during the last week in December, 1906, and the first week in January, 1907, and stated that further reference to the subject would be made and some action suggested in due time.

Dr. Philip Dowell, for the publication committee, reported that the pamphlet containing the History, Act of Incorporation, Constitution and By-Laws, list of members, etc., had been printed in accordance with instructions, and that it was ready for distribution.

The following was elected to active membership:

William A. Crane, Stapleton.

Dr. Arthur Hollick exhibited a specimen of soapstone rock, containing well-defined octahedral crystals of magnetite and read the following paper:

A SOAPSTONE DRIFT BOWLDER CONTAINING MAGNETITE.

This specimen was found by Mr. William T. Davis near Gifford's Lane, and it probably represents a fragment transported by glacial action from the outcrops on or just to the north of Richmond Hill. Transported fragments and boulders of red jasperoid limonite are conspicuous in the same locality where the specimen was found, and these were certainly derived from the Richmond Hill region, where the limonite is in place.

Thus far we have not found any magnetite as well defined as these crystals are in any of our soapstone outcrops, but in very fine particles it is a well known constituent of the rock at many localities. Some of this iron ore is known to contain chromium and has been listed as chromite, a quite large fragment of which, found on Ward's Hill, Tompkinsville, was shown at our meeting on December 9th, 1893,

(*Proc.* vol. iv, p. 7), and is now in our museum.

In connection with this subject, the following note on p. 401 of the *Mineralogy of New York*, by Lewis C. Beck (*Natural History of New York*, Part iii, Albany, 1842), is of interest:

"CHROME-IRON ORE * * * Richmond County. Octahedral crystals of this mineral have long been credited to the serpentine at the Quarantine and elsewhere in this county. It is probable that they have sometimes been nothing more than magnetic iron ore."

Mr. William T. Davis exhibited specimens of fresh water sponges and read the following paper:

FRESH WATER SPONGES FROM A POND NEAR RICHMOND.

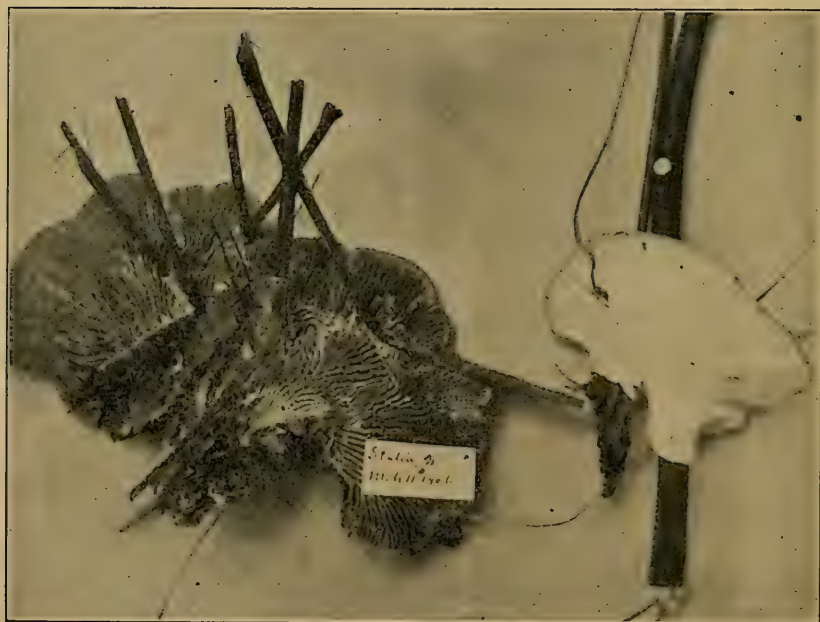
On the 18th of February, Mr. James Chapin and I found a great many sponges in a swamp or shallow pond near Richmond. The water had been low before the pond was frozen over, and consequently the sponges were above the ice on the twigs and prostrate branches that had been submerged last summer. We saw about fifty of the dried sponge masses, and from those exhibited it may be seen that some are of considerable size. About three inches long and an inch and one-half in diameter seemed to be the average dimensions.

Some rather large gray sponges, probably of the same species, were found several years ago in Martling's pond in the Clove Valley, and with Mr. Thomas Craig and Mr. Frederick F. Hunt we collected what were probably two species in a small pond near Gifford's Lane at Green Ridge. Sponges have also been found in Silver Lake, and indeed may be discovered in most any of our ponds, but not in such abundance as in the little pond near Richmond.

Mr. Davis and Mr. James Chapin exhibited several shell pellets and submitted the following account of their occurrence:

SHELL PELLETS FOUND ON THE BEACH NEAR OAKWOOD.

On the 12th of last February, we found on the beach near Oakwood a number of pellets, consisting of broken clam and mussel shells, which had apparently been disgorged by some birds after the manner in which owls disgorge pellets. Herring gulls rose in numbers near the place where the pellets were found, and we also saw several ducks in the vicinity. The pellets have been shown to several well known ornithologists, but they have been unable to say what bird produced them, and the matter



Fungi enclosing various objects.—Edwards (p. 33).

therefore has some interest. The pellets are about the size of English walnuts and break easily when handled. Some of them are composed wholly of soft-clam shells, one or two unbroken shells being occasionally included at one end. These, of course, may have adhered when the pellets were first cast upon the beach, though that does not appear to have been the case. The little soft-clam (*Mya arenaria* Linn.), about one-half inch long and containing the dead animals, were exceedingly numerous at the last high tide marks on the day of our visit. The other pellets found were composed of about equal parts of broken mussel shells (*Mytilus edulis* Linn.) and broken soft-clam shells, which combination gave them a mottled appearance.

The specimens of pellets exhibited intact have been soaked in shellac, which accounts for their yellow color.

As several specimens of the surf scoter duck, *Oidemia perspicillata* (Linn.), were seen in the vicinity at the time the pellets were found, it is possible that these birds may have been responsible for them.

SPECIMENS EXHIBITED.

Mr. Davis exhibited a section of the trunk of a large poison sumac (*Rhus Vernix* L.) from Clove Lake swamp, and a photograph of the tree from which it was obtained taken by Mr. Romeyn B. Hough on October 10th, 1905.

Also a cocoon of the American silk worm (*Telea polyphemus* Cramer), constructed in the nest of a chipping sparrow (*Spizella socialis* Wils.), and collected by a pupil of Mr. Stafford C. Edwards.

Mr. Edwards exhibited a series of specimens of fungi having grown around and enclosed various foreign objects, including twigs, grass stems and blades, hickory nuts, moss, a feather and a fragment of rock. Also an abnormal form, apparently of an *Elfvigia*, which had developed peculiar finger-like prongs, probably due to having been in contact with moving leaves while in process of growth.

Photographs of some of these have been made, two of which are shown in the accompanying plate.

Mr. Alanson Skinner exhibited a series of photographs illustrating the Iroquois-Algonkin Indians and other New York tribes, and gave an account of their former wars and migrations and their distribution at the present time.

NOTES AND COMMENTS.

Mr. James Chapin read a number of records of the recent appearance

of the great black-backed gull (*Larus marinus* Linn.) in New York and vicinity.

Mr. Davis read from Wilson's Ornithology, pp. 336, 337, an account by Dr. Samuel L. Mitchill of a fishhawk's nest on his farm and inquired of Mr. William H. Mitchill if he knew the location of the farm. Mr. Mitchill stated that it is located at Manhasset, Long Island.

The meeting then adjourned.

REGULAR MEETING.

APRIL 21st, 1906.

The meeting was held at the residence of Mr. William A. Shortt, Tompkinsville.

First Vice President William T. Davis in the chair.

Seventeen members were present.

The minutes of the meeting of March 17th, 1906, were read and approved.

The President was authorized to appoint a committee to suggest nominations for trustees to be voted for at the forthcoming annual meeting of the Association, and how they may be grouped into one, two and three year terms of office, in accordance with the By-Laws.

The Chairman was requested to appoint a committee to formulate the available sources of information relating to our local water supply and to report at the next meeting of the Association.

The Chairman appointed Mr. Thomas A. Fulton, Mr. William MacDonald and Dr. Arthur Hollick as such committee.

The following were elected to active membership :

Adolf E. Feige, Jr., Huguenot.

David F. Simonson, Port Richmond.

Mr. William T. Davis exhibited specimens of several species of *Rudbeckia* and read the following paper :

ABERRANT FORMS OF *RUDBECKIA HIRTA* L.

The cone flower *Rudbeckia hirta* L., a native of the western prairies, is now a well established weed on Staten Island, as it is in most other parts of the eastern states. While a nuisance to the farmer, it certainly adds much to the beauty of our meadows, and being subject to considerable variations, is of more than common interest to the botanist. The plant is sometimes called "black-eyed Susan," on account of the purple-brown disk of the flowers, but individuals are occasionally met with that have the disk yellowish-green and are veritable green-eyed Susans. Several such plants have been observed on the Island.

Cone flowers may be occasionally found in blossom in the fall.

This is particularly the case where they have been cut off during the summer, and not having been able to blossom at the usual time, they make a hasty growth in the few remaining warm days. Such plants are usually low and spreading, and what is of more interest is the fact that the green involucral bracts are foliaceous, and as long or longer than the orange rays. Plants of this description have been found on our Island in October and in November.

Another interesting variation was observed by Dr. Philip Dowell and me at Suffern in Rockland Co., N. Y., where we found a great many cone flowers with very flat, small ovoid disks. They truly did not deserve the name of "cone flowers."

Still another variation was found in a plant growing on the embankment of the railroad near Suffern. It was a large and flourishing plant of *R. hirta* with the rays terra cotta colored, splashed irregularly with orange. It made a conspicuous and beautiful flower cluster.

Occasionally a cone flower producing one or more fasciated stems will be found, each stem bearing at its top a head of flowers made up of two or more of the usual flowers combined. We have also found heads with a double row of rays but otherwise showing no departure from the typical flowers.

The most interesting variation of *Rudbeckia hirta* that we have to mention is, however, one that was found last June in the rise on the salt meadows known as "Egypt," on the south side of our Island. The plant bore three flowers, each having all of the rays tubular instead of flat. The under surface of the rays formed the outside of the tubes which were complete, each tube having a dentated opening about 3 mm. wide. Two of the flowers had nine rays each, and one flower had eleven rays. The usual number of rays in this species is about thirteen or fourteen.

Cone flowers with tubular rays have been recorded before, and in an article on "Unusual Forms in Plants," printed in Appleton's *Popular Science Monthly* for July, 1899, Byron D. Halsted writes as follows: "A few weeks ago while passing through a field once devoted to corn, but now overgrown with weeds, and therefore of special interest to the botanist, my eyes fell upon a daisy plant all the heads of which were furnished with olive-green ray flowers instead of the ordinary pure white ones. These rays were smaller than the normal and quile inclined to roll . . . and form quills, as seen in some of the fancy chrysanthemums . . . A week or so later, while going through a similar field in an adjoining county to the one where the daisy freak was found, I came upon nearly the same thing as seen in the heads of the "black-eyed Susan," or cone flower (*Rudbeckia hirta* L.)"

In "Species and Varieties, Their Origin by Mutation," Prof. Hugo DeVries records the following of a tubular-rayed composite: "In concluding this series of examples of horticultural mutations, I might mention two cases, which have occurred in my experimental garden. The first refers to a tubular dahlia. It has ray florets, the ligules of which have their margins grown together so as to form tubes, with the outer surface corresponding to the pale under-surface of the corolla.

"This novelty originated in a single plant in a culture from the seed of the dwarf variety—Jules Chretien. The seeds were taken from introduced plants in my garden, and as the sport has no ornamental value, it is uncertain whether this was the first instance or whether it had previously occurred in the nursery at Lyons, from whence the bulbs were secured. Afterwards it proved from seed, but was very variable exhibiting rather the features of an ever-sporting variety."

There are several examples of flowers with tubular petals mentioned by Maxwell T. Masters in "Vegetable Teratology," also cases where the petals have cohered.

In conclusion, we may add that here on Staten Island we have two other species of *Rudbeckia*, namely *R. laciniata* L. and *R. speciosa* Wenderoth. The last mentioned was found at Tottenville in 1898 and 1899 (*Proc. Nat. Sci. Assn. S. I.*, Oct., 1900); but the ground has since been built upon, and the species has probably been exterminated on the Island. The white-rayed ox-eye daisy, which came to us from the Old World, begins to blossom about the middle of May, I have found it on the Island as early as the 14th of the month. It is not until the first week in June, and more often later, that the yellow daisy or cone flower from the western plains begins to star the meadows. The native *Rudbeckia speciosa* I found to blossom later at Tottenville than *Rudbeckia hirta*, the first flowers not appearing until the last week in June.

Dr. Philip Dowell exhibited specimens and read the following:

BOTANICAL NOTES.

Additions to the Local Flora.

Salix Bebbiana Sarg. A single tree, 20 to 25 feet high, was found near Merrell Avenue, not far from South Avenue.

Sisymbrium altissimum L. A single clump of this plant was found growing along the roadside on Charles Avenue, Port Richmond.

Brassica juncea (L.) Cosson. Found in waste ground at Port Richmond. Mr. Wm. T. Davis has specimens of this Indian mustard col-

lected by himself at New Brighton and at Richmond. He has also a specimen collected by Dr. A. A. Tyler at Richmond Valley.

Diplotaxis muralis (L.) DC. This sand rocket was found along Old Quarry Road just below Quarry Hill, not far from Elm Park station.

Roripa hispida (Desv.) Britton. A single plant was found near Arlington station in 1903.

Amelanchier spicata (Lam.) Dec. Mr. Davis and I found this low Juneberry in the sandy Watchogue region. It is usually found in "rocky places."

Viola rotundifolia Michx. Quite a few plants of this so-called stemless yellow violet were found growing in the woods southeast of Bull's Head.

Scrophularia leporella Bicknell. The specimen exhibited was collected at Palmer's Run near Port Richmond. I have records of the plants also from Silver Lake, New Springville and Richmond.

Aster undulatus loriformis Burgess. This variety of the wavy-leaf aster was found near Richmond, where typical *A. undulatus* L. is abundant.

Tanacetum vulgare crispum DC. Mr. Davis and I found this plant in 1903 at the junction of Bradley Road and Richmond Turnpike. Dr. N. L. Britton called my attention to this crisp-leaved variety of the tansy growing in the vicinity of Prince Bay.

On account of changes in nomenclature the following should be noted:

Myrica Carolinensis Mill. The common bayberry of our region was originally reported under the name *M. Cerifera* L., which is a more southern plant.

Zizia aurea (L.) Koch. Found along railroad at Arlington station.

Zizia cordata (Walt.) DC. Richmond and Ocean Terrace. These two were probably included under *Thaspium* in the original report.

New Localities.

Allium tricoccum Ait. Mr. Davis and I found this wild leak at Old Place late in the fall of 1904. It grows also near the junction of Merrell Avenue and South Avenue. It has been reported from Clove Lake and New Springville, at both of which places it is still found.

Salomonina commutata (R. & S.) Britton. The smooth Solomon's seal was found at Richmond and at Silver Lake. It has been reported from Clove Lake.

Iris prismatica Pursh, the slender blue flag, grows in the meadows

near Palmer's Run, Port Richmond, and at Old Place. It was originally reported from New Dorp.

Isotria verticillata (Willd.) Raf. This has been reported from Huguenot, Giffords and Mariners Harbor. Mr. Davis and I found it east of Richmond toward Oakwood. With Mr. Stafford C. Edwards I found the plant in woods on the east side of Bradley Road. I have found it also in the woods just east and a little south of Egbertville.

Acroanthes unifolia (Michx.) Raf. This inconspicuous little orchid has been reported from New Dorp, Egbertville and Ocean Terrace. Mr. Davis and I found the plant at Great Kills and east of Richmond toward Oakwood.

Leptorchis Loeselii (L.) MacM. This was originally reported as occurring "On Staten Island in the gravelly bank of a railroad cutting." It has also been reported as found near Garretson by Miss C. A. Timmerman. The specimens exhibited were collected near the railroad west of Arlington station in 1904.

Urtica dioica L. This stinging nettle has been reported from Richmond. It grows also along the roadside leading south from Castleton Corners, not far from Ocean Terrace.

Urticastrum divaricatum (L.) Kuntze, the wood nettle, is still abundant in Bloodroot Valley, from which it was originally reported. I have found it around Richmond, along Palmer's Run at Port Richmond, and in the woods along South Avenue.

Polygonum emersum (Michx.) Britton was originally reported as *P. amphibium* L. from New Dorp. The specimen exhibited was collected near Green Ridge.

Alsine longifolia (Muhl.) Britton. The plant is abundant along Palmer's Run at Port Richmond, and this name should replace the *Stellaria longipes* Goldie reported from this locality. It grows also in the wet meadows in the Mariners Harbor region. It was originally reported from Tottenville.

Ranunculus obtusiusculus Raf. has been reported from Bull's Head and New Springville. I have found it in the marshes and swamps along Old Quarry Road and along South Avenue.

Ficaria Ficaria (L.) Karst. This plant was originally reported from near Four Corners. I am told by Messrs. Davis and Charles W. Leng that the plant has not been found in this locality in recent years. Dr. Arthur Hollick found a new locality for the plant and reported it in 1890 from "Willow Brook. Scarce." He tells me this locality is a little west of Bull's Head. Since the plant has been so scarce it may be of interest to note that I have found several closely matted patches of it this spring, also along Willow Brook but east of Bull's Head.

Menispermum Canadense L. The moonseed has been reported from Richmond and Egbertville, where it is still found. Mr. Davis and I found the plant in 1903 at Ward's Point. I have found the plant also in the little piece of woods near Charles Avenue, Port Richmond.

Chelidonium majus L. This is the common celandine, and it is becoming more common on the Island. It has been reported from Egbertville, Richmond, New Dorp and Mariners Harbor. I have found it also at Dongan Hills, Grymes Hill, and in the vicinity of Bull's Head and New Springville.

Roripa sylvestris (L.) Bess. has been reported from the Woods of Arden and from Snug Harbor. I have found it also near Palmer's Run at Port Richmond.

Roripa palustris (L.) Bess. has been reported from Port Richmond, Woodrow and Stapleton. I found it in 1903 at Brooks' Pond, Old Quarry Road near Quarry Hill, and along South Avenue.

Roripa Nasturtium (L.) Rusby. The common water cress has been reported from Clove Lake and from Silver Lake. By this time it is more generally distributed. I have specimens from South Avenue and from Graniteville.

Roripa Armoracia (L.) A. S. Hitchcock. This, the common horseradish, has been reported as found growing wild at New Dorp and at Tottenville. The specimen exhibited was collected near the old dye works at Mill Creek Pond near Port Richmond, but the plant has been found in other localities of late years by Mr. Davis and others.

Dentaria laciniata Muhl. The cut-leaved pepper root has been reported from Silver Lake, Grant City and New Dorp. I have found the plant at Mill Creek Pond near Port Richmond, on Richmond Hill near Egbertville, and in a swamp along South Avenue. Mr. Davis tells me he has found it also at West New Brighton.

Saxifraga Pennsylvanica L. The swamp saxifrage was originally reported from a "swamp near Clove Lake." Later it has been found by several collectors in Reed's Basket Willow Swamp, though no one has previously taken the trouble to report it. The specimen exhibited was collected in a swamp along South Avenue.

Spiraea tomentosa L. has been reported from Clove Lake, New Dorp and Richmond. Additional localities are the Bull's Head region and just north of Bloodroot Valley.

Trifolium arvense L. The rabbit foot clover has been reported from Mariners Harbor and Tottenville. I have a specimen from Richmond.

Linum usitasissimum L. The common flax is commonly found along the railroads. The specimen exhibited was collected near Arlington

station. The plant has been reported from Clove Lake, New Brighton and Tottenville.

Polygala ambigua Nutt. This was originally reported from Tottenville. I have found specimens answering to the description of this species at Port Richmond, Iron Mines at Westerleigh, and in the woods along Ocean Terrace.

Polygala Nuttallii T. & G. This has been reported from New Brighton, Richmond and Tottenville. I have found it quite common in wet meadows along the North Shore, and west near the junction of Merrell Avenue and South Avenue.

Enonymus Americanus L. This plant was originally reported from Clove Lake swamp. Just why it has not been reported from other localities I do not know, for it is common in our denser moist woods. I have collected specimens on Long Neck, along South Avenue, near New Springville, at Richmond, and at Port Richmond.

Staphylea trifolia L. The American bladder nut was originally reported in the "Elliott Collection." The finding of this plant at New Springville by Mr. Davis and myself gives us a definite locality.

Viola Le Conteana Don was reported from Clove Lake as *V. blanda amoena* (Le Conte) B. S. P. The same kind of violet grows in the woods along Bradley Road, at Bull's Head, and New Springville.

Oxypolis rigidus (L.) Raf. Reported from Linden Park, Tottenville, and Old Place. Mr. Davis and I have found this plant common on Long Neck and in the Watchogue region. It grows also in the vicinity of Richmond. Many of the plants of these regions have very narrow leaflets and should be considered a variety,—quite different, however, from the plants of the New Jersey pine barrens.

Lysimachia Nummularia L. This creeping loosestrife has been reported from Todt Hill and Garretson. It grows also at West New Brighton, Port Richmond, along Richmond Turnpike near Willow Brook hamlet, along the Egbertville Road near New Springville, at Clove Lake, and at several other places.

Naumburgia thyrsiflora (L.) Duby. I found this tufted loosestrife in a pond in the Middletown forest, not far from the top of Todt Hill. It has been previously reported from Silver Lake and Linden Park.

Gentiana Saponaria L. This has been only locally reported as occurring at Clove Lake and at Tottenville. More recently it has been well known as our common gentian, and it is found abundantly in wet meadows on the Island.

Convolvulus arvensis L. has been reported from New Dorp. I found it at Westerleigh in 1903. It grows also at Stapleton, Port Richmond, and New Brighton.

Hydrophyllum Virginicum L. still grows abundantly in Bloodroot Valley, from which it was originally reported. I have found it also near New Springville.

Dipsacus sylvestris Huds. The wild teasel grows along the Old Quarry Road near Quarry Hill. It has been reported from West New Brighton, Garretson, Green Ridge and Bull's Head.

Eupatorium verbenaeifolium Michx. was originally reported from New Dorp as *E. teucriifolium* Willd. It is found quite commonly in our moist meadows. Definite localities are Old Quarry Road near Quarry Hill, and the Mariners Harbor and Watchogue regions, and Pleasant Plains.

Eupatorium ageratoides L. f. has been reported from Richmond, Ocean Terrace and Silver Lake. It is found quite generally in moist woods on the Island. I have found the plant at Port Richmond, Clove Lake, Bloodroot Valley and New Springville.

Solidago patula Muhl. has been reported from Richmond, Garretson, Clove Lake, Watchogue and Mariners Harbor. New Springville should be added to this list.

Solidago neglecta T. & G. This swamp goldenrod was originally reported from Clove Lake and "S. I." Mr. Davis and I have found it at Grant City, South Beach, South Avenue and Linoleumville. I have found it also in a swamp a short distance west of Richmond.

Euthamia Caroliniana (L.) Greene has been reported from Tottenville and Watchogue. I have found it also near Old Quarry Road, below Quarry Hill.

Aster macrophyllus L. This aster has been reported from Clove Lake and Eltingville. It is found quite commonly in our denser woods. Definite localities are Bull's Head, New Springville and Mariners Harbor.

Aster paniculatus Lam. This aster was originally reported as *A. simplex* Willd. as abundant in Clove Lake swamp. I have found it in several localities on the Island, mostly along roadsides. Definite localities are Port Richmond, Little Clove Road, the Egbertville Road, Richmond Turnpike opposite Darcey's woods (near Willow Brook hamlet), on Manor Road south from Castleton Corners, and at Tottenville.

Helianthus annuus L. The common sunflower has been reported from Tottenville and South Beach. I have found it quite commonly in waste ground at Port Richmond, West New Brighton, St. George and Tompkinsville.

Helianthus tuberosus L. The Jerusalem artichoke has been reported from Giffords and New Dorp. This sunflower is also commonly found

in waste ground, as at Port Richmond and West New Brighton. There was a magnificent growth of this plant on the vacant lots along Hamilton avenue, New Brighton, before the ground was cleared for the new houses put up last year.

Galinsoga parviflora Cav. This plant was originally reported from near "Court House Station" and New Brighton, but it is now a very common weed in cultivated waste ground.

Anthemis arvensis L. has been reported from the "South Side." I have found it also near Brooks' Pond on the west side of the lake.

Matricaria Chamomilla L. has been reported from West New Brighton. I collected specimens of the plant in 1906 at Quarry Hill, where it had probably escaped from cultivation. It grows also along the roadside at Stapleton.

Dr. Arthur Hollick read the following notes on

TWO OLD PUBLICATIONS RELATING TO STATEN ISLAND AND VICINITY

I.—A short time ago I came across a newspaper notice to the effect that a reprint of Daniel Denton's "A Brief Description of New York," etc., had recently been issued by Burrows Bros., of Cleveland, Ohio, and on inquiry at the library of Columbia University I found copies of both the reprint and the original. This is an exceedingly interesting work, the scope of which may be judged from the title page, which reads as follows:—

A
BRIEF DESCRIPTION
OF
NEW-YORK :
FORMERLY CALLED
NEW-NETHERLANDS.
WITH THE PLACES THEREUNTO ADJOYNING.
TOGETHER WITH THE
Manner of its Scituation, Fertility of the Soyle,
Healthfulness of the Climate, and the
Commodities thence produced.

By DANIEL DENTON

LONDON,

Printed for *John Hancock*, at the first shop in *Popes-Head-Alley* in *Cornhil* at the three Bibles, and *William Bradley* at the three Bibles in the *Minories*. 1670.

Of special interest to us, however, is a brief reference to Staten Island, which reads as follows :

“ Within two leagues of New York lieth Staten Island, it bears from New York West something Southerly : It is about twenty-miles long, and four or five broad, it is most of it very good Land, full of Timber, and produceth all such commodities as Long Island doth besides Tin and store of Iron oar, and the Calamine stone is said likewise to be found there : There is but one Town upon it consisting of English and French, but it is capable of entertaining more inhabitants; betwixt this and Long Island is a large Bay, and is the coming in for all ships and vessels out of the Sea : On the North-side of this Island After-skull River puts into the main Land on the West-side, whereof is two or three Towns, but on the East-side but one. There is very great Marshes or Meadows on both sides of it, excellent good Land, and good convenience for the settling of several Towns; there grows black Walnut and Locust, as their doth in Virginia, with mighty tall straight Timber, as good as any in the North of America ; It produceth any Commoditie Long Island doth.”

We can recognize Arthur Kill or Achter-Kull in the name “ After-skull River,” and it would be interesting to know where the “ Town * * * consisting of English and French ” was located, as according to the author’s account this was the only settlement on the Island at that time.

The “ Calamine stone ” mentioned is apparently meant for the zinc ore of that name, but as no trace of that mineral has been found here it is evident that the author has been misinformed in regard to its presence as well as in regard to tin.

II.—At our last meeting Mr. Wm. T. Davis had occasion to incidentally mention the name of Dr. Samuel L. Mitchill, grand-uncle of our fellow member, Mr. William H. Mitchill.

I have here a copy of the “ Catalogue of the Organic Remains and other Geological and Mineralogical Articles contained in the Collection presented to the New York Lyceum of Natural History by Samuel L. Mitchill, one of the Members,” published in 1826. It contains a steel-engraved plate of Dr. Mitchill.

The manner of listing the specimens is unique, or at least it seems so at the present day. On p. 24 there is listed “ Ammonites, pectinites, madreporites, and spirulites, in wacke. Castleton, Staten Island.”

This appears to be the only record of any specimens from Staten Island, and it probably refers to some that were obtained from a drift boulder.

The entire list indicates a curious lot of material from all parts of the world, arranged with but little system or regard for natural affinities. The last articles listed on "The twelfth Shelf" give an excellent idea of the way in which collections were arranged in the early days of museum economy, viz.:

"8. Stalactite, from Madison's Cave, Vir.—Van Ness.

9. French chalk, or craye de Briançon.

10. Factitious substance, resembling pumice, from Allaire's Iron-works, Egg Harbour.

11. Steatite, from Orford, high up Connecticut River: of which stones and fire places have been made.—Quincy.

12. Kelp, from Falkland Islands, from the burning of seaweeds.—McKay.

13. Several other things."

It is difficult to imagine what such an exhibit was meant to illustrate, and it is almost equal to that of the first Philadelphia museum, in which it was said that a stuffed monkey, a thigh bone of a mastodon and a machine for illustrating perpetual motion were placed in the same case, side by side.

SPECIMENS EXHIBITED.

Mr. James Chapin exhibited specimens of sumac branches showing the work of woodpeckers, together with skins of the downy woodpecker *Dryobates pubescens medianus* (Swains.), hairy woodpecker *D. villosus* (Linn.), and highholder *Calaptes auratus luteus* Bangs, and stated that most of the work was probably done by the species first named.

Mr. Chapin also exhibited a living specimen of the diamond-back terrapin *Malaclemmys centrata* Labr., captured at Watchogue.

Mr. Edward C. Delavan exhibited a large specimen of English flint, probably refuse from King's plaster mills, found in a rubbish heap in Green's field, New Brighton.

The Secretary read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND.

"Affinities of Certain Cretaceous Plant Remains Commonly Referred to the Genera *Dammara* and *Brachyphyllum*." Arthur Hollick and Edward C. Jeffrey. *Am. Nat.* vol. xl (1906), pp. 189-216, pls.

1-5 [plates not numbered but referred to by numbers in the accompanying text].

This contribution, aside from any scientific value that may pertain to it, is locally of interest for the reason that it was inspired by and is based upon discoveries made at Kreischerville by one of our members, and first announced at one of our meetings (*Proc. Nat. Sci. Assn. S. I.*, vol. ix, pp. 31, 32, Nov. 12th, 1904.)

The material selected by the authors for examination was obtained mostly from the amber bed in the Androvette clay pit, but some specimens came from the nearby Drummond pit. This material consisted of lignitic fragments, which were separated from the matrix by maceration in water, and other larger isolated pieces of lignite. Special attention was devoted to certain cone scales commonly referred to the genus *Dammara*; leafy branches recognized as belonging to the extinct coniferous genus *Brachyphyllum*, and some of the coniferous lignites. The results obtained from microscopical examinations of these remains are described and figured.

The cone scales are shown not to belong to the genus *Dammara*, but to a hitherto undescribed extinct genus, closely allied, to which the name *Protodammara* is given, and the Kreischerville specimens are recognized as a new species under the name *P. speciosa*; the genus *Brachyphyllum* is identified for the first time as belonging to the Araucarineous group of conifers and probably as representing the leafy branches of the tree that bore the *Protodammara* cones, and the lignites are also identified as belonging to the same coniferous group.

The value of critical microscopic examination of such material is emphasized throughout the text, and the illustrations are admirable examples of photomicrographic work.—A. H.

The meeting then adjourned.

ANNUAL MEETING.

MAY 19th, 1906.

The first annual meeting of the Association was held at the Staten Island Academy, New Brighton.

President Howard R. Bayne in the chair.

Nineteen members were present.

The minutes of the meeting of April 21st, 1906, were read and approved.

The following reports were read and ordered placed on file.

ANNUAL REPORT OF THE BOARD OF TRUSTEES.

The Board held two stated and two special meetings.

One trustee, Mr. Lester W. Clark, Sr., resigned, and Dr. Philip Dowell was selected to fill the vacancy.

Rules and regulations for the transaction of the business of the Board were formulated and adopted.

An Executive Committee, an Auditing Committee, and a Publication Committee were provided for and appointed. Each of these committees organized, met when necessary and transacted such business as came within the scope of its duties from time to time during the year. Reports of these committees are appended.

The formal transfer of the property of the Natural Science Association of Staten Island to the Staten Island Association of Arts and Sciences was accomplished, and copies of the legal papers in the matter were placed in the custody of the Recording Secretary.

Boxes for the keeping of important official papers were obtained for the Recording Secretary and Treasurer respectively, and were placed in the safe deposit vault of the Staten Island branch of the Corn Exchange Bank at St. George.

A corporate seal of the Association was made and placed in the care of the Recording Secretary.

The Treasurer was placed under a bond of \$1,000.00 in the United States Guarantee Company of New York.

Provision was made for the permanent investment of all life membership contributions, separate from the general funds of the Association.

The routine business of the Association has been carried on continuously by the officers, as will be set forth in their annual reports.

Respectfully submitted for the Board,

Arthur Hollick, Secretary.

Report of the Executive Committee.

The Executive Committee held only one formal meeting, on March 26, 1906, at which the following items of business, referred to the Committee by the Board of Trustees, were acted upon :

I.

Resolved: that the form and amount of the Treasurer's bond be referred to the Executive Committee with power to determine.

[Extr. Minutes Board of Trustees, Dec. 5, 1905.]

Bond No. 230080, of the United States Guarantee Company, 111 Broadway, New York, N. Y., in the sum of \$1,000.00, for one year, from January 10th, 1906, to January 10th, 1907, was submitted and examined.

Voted: that the Treasurer's bond in the sum of \$1,000.00 (Bond No. 230080 of the United States Guarantee Company), be and the same is hereby approved.

Voted: that the Treasurer be authorized to pay the amount of the annual premium (\$7.50) from the funds of the Association.

II.

Resolved: that the disposition of moneys received from life membership fees be referred to the Executive Committee with power to determine.

[Extr. Minutes Board of Trustees, Jan. 6, 1906.]

It was determined to open a savings bank account by depositing \$100.00, representing the two life membership contributions of fifty dollars each, previously received; and it was *Voted:* that all future life membership contributions be deposited to the credit of the said account, and that this account, including all accrued interest thereon, be reserved as a permanent investment fund.

The routine work of the Committee, such as was necessary to keep the administrative machinery of the Association in motion during the intervals between the meetings of the Board of Trustees, was accomplished by informal conferences from time to time.

Negotiations with the municipal authorities in regard to obtaining quarters for the Association in the new Borough Hall were carried on continuously and are yet under way. The President in his annual address will give such further information in this connection as he may deem proper, but the details are under advisement and should be regarded as matters for executive consideration until finally adjusted.

Howard R. Bayne, chairman.

J. Blake Hillyer.

William H. Mitchell.

Charles A. Ingalls.

Arthur Hollick, secretary.

Report of the Auditing Committee.

The Auditing Committee held one meeting, on January 9th, 1906, on which date the books and accounts of the Treasurer were subjected to careful examination. These were found to be correct, and a certificate to that effect was transmitted to the United States Guarantee Company, with which the Treasurer is bonded.

George S. Humphrey, chairman.

Charles A. Ingalls, secretary.

Report of the Publication Committee.

The Publication Committee met and formally organized on December 21st, 1905. Rules and regulations designed to secure uniformity in the publications of the Association were formulated and adopted, and the details of preparing copy, editing, printing and distributing publications were arranged.

Since that time the following publications of the Association have been issued and distributed :

I. Index to vol. ix of the *Proceedings of the Natural Science Association of Staten Island*. Edition of 250 copies.

II. Pamphlet of 25 pages, containing a brief history of the Association, Act of Incorporation, Constitution and By-Laws, Rules and Regulations of the Board of Trustees, list of members, officers and standing committees. Edition of 350 copies.

III. Part I of Volume I of the *Proceedings of the Staten Island Association of Arts and Sciences*, consisting of an octavo pamphlet of 20 pages, containing the proceedings of the meetings of June 3d, October

Disposition of Funds.

On deposit in Staten Island Savings Bank.....	\$316.02
“ “ “ Corn Exchange Bank, Staten Island Branch.....	304.13
Cash in hands of Treasurer	7.45
	<hr/>
	\$627.60

Additional Assets.

Back dues outstanding	\$33.00
Current dues payable.....	34.50
	<hr/>
	\$67.50

Liabilities.

Outstanding obligations (estimated).....	\$5.00
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J. Blake Hillyer,
Treasurer.

REPORT OF THE HONORARY CURATOR.

Museum Collections.

Eight separate donations have been made to the Museum, including 4 specimens in botany, 30 in geology, and several hundred in zoology.

The most important accession is the collection of several hundred shells donated by Rev. Ernest F. Neilson of Newburgh, N. Y., a former member and one of the organizers of the Natural Science Association of Staten Island.

By reason of want of space it has not been possible to display any of the recent accessions, which have been placed in the care of the members of the Association temporarily, and a large amount of additional material has been promised as soon as adequate accommodations can be secured.

Library.

A number of historical documents, old local newspapers, pamphlets and newspaper clippings of local interest, pictures, photographs, etc., have been donated, which should be properly classified and arranged under approved library methods.

The publications received in exchange for the *Proceedings* has increased, although no effort in this direction has been made on the part of the Association. Our regular mailing list now includes eighty-five societies and institutions, from the following of which publications have been received during the past year:

Academy of Natural Sciences of Philadelphia, Philadelphia, Pa.;
Proceedings.

- Academy of Science of St. Louis, St. Louis, Mo.; *Transactions*.
 American Academy of Arts and Sciences, Boston, Mass.; *Proceedings*.
 Augustana College and Theological Seminary, Rock Island, Ill.;
Library Publication.
 Boston Society of Natural History, Boston, Mass.; *Proceedings*.
 Brooklyn Institute of Arts and Sciences, Brooklyn, N. Y.; *Science
 Bulletin* and *Cold Spring Harbor Monographs*.
 Cincinnati Society of Natural History, Cincinnati, Ohio; *Journal*.
 Colorado College Scientific Society, Colorado Springs, Colo.; *Colorado
 College Publications* and *Colorado College Studies*,
 Colorado Scientific Society, Denver, Colo.; *Proceedings*.
 Columbia University, Geological Department, New York, N. Y.;
Contributions.
 Davenport Adademy of Natural Sciences, Davenport, Iowa; *Proceed-
 ings*.
 Elisha Mitchell Scientific Society, Chapel Hill, N. C.; *Journal*.
 Entomological Society of Ontario, London, Canada; *Canadian En-
 tomologist* and *Annual Report*.
 Field Columbian Museum, Chicago, Ill.; *Publications* (Zoological,
 Geological, Botanical and Report Series).
 Geological Institute of the University of Upsala, Upsala, Sweden;
Bulletin.
 Geological and Natural History Survey of Canada, Montreal, Can.;
Annual Report and Catalogue of Canadian Birds.
 Geological Survey of Ohio, Columbus, Ohio; *Reports, Bulletin*.
 Historical and Scientific Society of Manitoba, Winnipeg, Manitoba;
Transactions and *Annual Report*.
 Instituto Geologico de Mexico, Mexico, Mex.; *Boletin, Parergones*.
 Kansas Academy of Science, Topeka, Kan.; *Transactions*.
 Linnæan Society of New York, N. Y.; Abstract of *Proceedings*.
 Lloyd Library, Cincinnati, Ohio; *Bulletin* and *Mycological Notes*.
 Michigan Academy of Science, Ann Arbor, Mich.; *Bulletin, Annual
 Report* and separate papers.
 Missouri Botanical Garden, St. Louis, Mo.; *Annual Report*.
 Museo Nacional de Costa Rica, San Jose, Costa Rica; *Paginas Ilus-
 tradas*.
 Museo Nacional de Montevideo, Montevideo, Uruguay; *Anales* and
 Flora Uruguaya.
 Natural History Society of New Brunswick, St. John, N. B.; *Bul-
 letin*.
 New York Academy of Sciences, New York, N. Y.; *Annals, Memoirs*.
 New York Botanical Garden, New York, N. Y.; *Bulletin*.

Nova Scotian Institute of Science, Halifax, N. S.; *Proceedings and Transactions*.

Oberhessischen Gesellschaft, für Natur-und-Heilkunde, Geissen, Ger.: *Berichte*.

Ohio State Archaeological and Historical Society, Columbus, Ohio: *Publications*.

Ottawa Field Naturalists' Club, Ottawa, Can.; *The Ottawa Naturalist*.

Public Museum of the City of Milwaukee, Milwaukee, Wis.; *Annual Report*.

Rochester Academy of Science, Rochester, N. Y.; *Proceedings*.

Roger Williams Park Museum, Providence, R. I.; *Bulletin, Apteryx and Monograph*.

Smithsonian Institute and United States National Museum, Washington, D. C.; *Bulletin, Contributions, Proceedings, Annual Report*.

Sociedade Scientifica de Sao Paulo, Sao Paulo, Brazil; *Reports and Revista*.

Societas Entomologica Bohemiae, Prague, Austria; *Acta*.

Societas Pro Fauna et Flora Fennica, Helsingfors, Finland; *Acta and Meddelanden*.

Torrey Botanical Club, New York, N. Y.; *Bulletin*.

Tufts College, Tufts College, Mass.; *Tufts College Studies* (Scientific Series).

United States Department of Agriculture, Washington, D. C.; *Bulletins*.

United States Geological Survey, Washington, D. C.; *Annual Report, Bulletin, Mineral Resources of the United States, Monographs, Professional Papers, Water Supply and Irrigation Papers*.

University of Kansas, Lawrence, Kan.; *Science Bulletin*.

University Museum, University of Michigan, Ann Arbor, Mich.; Reprints from *Annual Reports*.

University of Montana, Missoula, Mont.; *Bulletin* (Biological Series) and President's Report.

University of the State of New York, Albany, N. Y., *Annual Report and Bulletin*.

University of Vermont and State Agricultural College, Burlington, Vt.; *Annual Report and Bulletin*.

Vassar Brothers Institute, Poughkeepsie, N. Y.; Reprint of the Debate and Proceedings of the Convention of the State of New York at Poughkeepsie, June 17th, 1778.

Wilson Ornithological Club, Oberlin, Ohio; *Wilson Bulletin*.

Wisconsin Academy of Sciences, Arts, and Letters, Madison, Wis.; *Transactions*.

By subscription we have obtained the *American Naturalist* and

Psyche, current numbers, and by donation, from Mr. O. M. Curtis, the *Bulletins* of the American Geographical Society, and from Dr. Arthur Hollick the current numbers of *Science*.

Charles A. Ingalls,
Hon. Curator.

The committee on nominations for trustees reported as follows :

For term of three years :

Howard Randolph Bayne
William Thompson Davis
Arthur Hollick
Charles Arthur Ingalls

For term of two years :

Philip Dowell
John Blake Hillyer
George Scranton Humphrey
William Hinman Mitchill

For term of one year :

Daniel Delehanty
Samuel Alexander Henzey
William Armour Johnston
Adolph Charles Knothe
Charles William Leng

The report of the committee was received, and the Association proceeded to ballot.

Eighteen ballots were cast, resulting in the election of the nominees suggested by the committee, and the President declared them to be elected to their respective terms of office.

The committee appointed to determine the subject of competition for the year 1906-7 for the annual prize offered by the Association for work in natural science open only to pupils in the Curtis High School, and the conditions to govern the award of the prize, reported as follows :

Subject :

A collection of not less than fifty native and introduced wild plants of Richmond County.

Conditions:

1. The collection shall be made between July 1st, 1906, and June 1st, 1907.
2. Each specimen shall be separately mounted on a sheet of mounting paper, $16\frac{1}{2} \times 11\frac{1}{2}$ inches in size.
3. Each specimen shall be accompanied by a descriptive label giving the correct botanical name, the popular name when any such is recognized, the habitat (meadow, hill, swamp, woods, pond, etc.), the locality where found and the date when collected.
4. The entire work shall be completed and placed in the hands of the Principal of the School not later than June 17th, 1907.

Notes:

The prize may not necessarily be awarded for the *largest* collection. Care in the selection and preparation of the specimens, variety and rarity of the plants collected, etc., will also be considered.

It is recommended that not less than five species of grasses, ten species recognized as weeds, and ten specimens of shrubby plants and trees be included in each collection.

In the case of shrubs and trees the specimens may be either in flower or in fruit.

Voted: that the report of the committee be received and placed on file and that a copy of the same be transmitted to the authorities of the school, and that the original resolution be amended so as to read as follows:

Resolved: that the Staten Island Association of Arts and Sciences offer a prize of *the value of* ten dollars (\$10.00) annually for work done in natural science, open only to pupils in the Curtis High School, under such conditions as may be mutually agreed upon by the trustees of this Association and the authorities of the School: *the successful competitor to have the option of accepting either ten dollars or some object of equal value to be selected by him.*

The committee appointed to consider the subject of local water supply submitted a report consisting of a copy of a report made by Dr. Arthur Hollick to the Staten Island Chamber of Commerce in 1904, together with a bibliography of publications relating directly or indirectly to the subject.

Voted: that the report of the committee be received and placed on file, and the bibliography of publications be printed in the *Proceedings*, as follows:

References to Sources of Local Water Supply.

"Our Water Supply: Some Notes as to Its Quality and Quantity." Arthur Hollick. *Staten Isld. Magazine*, vol. i, Aug. 1888.

Report of the Health Committee of the Good Government Club on the Water Supply of New Brighton and Port Richmond. 1895.

Report on New York's Water Supply, made to Bird S. Coler, Comptroller by John C. Freeman, etc. 1900.

Report of the Merchants' Association on the Water Supply of the City of New York. 1900.

Report of the Commission on Additional Water Supply for the City of New York. 1903 [1904].

"The Normal Distribution of Chlorine in the Natural Waters of New York and New England." Daniel D. Jackson. U. S. Geol. Survey, *Water Supply and Irrigation Paper* No. 144, 1905.

Underground Water Resources of Long Island, New York." A. C. Veatch and others. U. S. Geol. Survey, *Professional Paper* No. 44. 1906.

Notes and articles in the *Proceedings of the Natural Science Association of Staten Island*, vol. ii, Feb. 14, 1891, p. 72; iii, Dec. 12, 1891, p. 5; iv, Feb. 9, 1895, p. 60; vi, Mch. 13, 1897, p. 22; vi, Dec. 11, 1897, p. 45; vi, Oct. 8, 1898, p. 62; vi, Oct. 8, 1898, p. 63; vii, June 10, 1899, p. 19; vii, Feb. 10, 1900, p. 33; vii, Oct. 13, 1900, p. 46; viii, Dec. 13, 1902, p. 45; viii, Mch. 14, 1903, p. 57; viii, Oct. 10, 1903, p. 68; ix, Feb. 13, 1904, pp. 9, 11.

The President announced that he had appointed a special committee, consisting of Mr. Ira K. Morris, Mr. Wm. T. Davis and Dr. Arthur Hollick, to confer with Borough President George Cromwell, on his request, in relation to the inscription of local important events and dates on a bronze tablet proposed to be placed in the new Borough Hall, and Mr. Morris read a tentative list of such events.

The action of the President was approved, and the Committee was authorized to confer with Mr. Cromwell with power to determine what events it would be desirable to have inscribed on the tablet.

Mr. J. Blake Hillyer referred to the fact that the 12th of next November would be the 26th anniversary of the organization of the Natural Science Association of Staten Island, and suggested that the event should be celebrated and commemorated in some manner suitable to the occasion.

Voted: that the Board of Trustees be directed to consider and to

formulate a program to celebrate and commemorate the organization on November 12th, 1881, of the Natural Science Association of Staten Island.

The President then delivered his annual address as follows :

ANNUAL ADDRESS OF THE PRESIDENT.

The By-Laws of this Association require that the President shall deliver an address at the annual meeting following his election to office. The subject and scope of such an address are not designated, but it may be assumed that it has to deal with the transactions and progress of the Association during the past year and occurrences in the community which it serves and with which it has a deep concern.

The past year witnessed the dissolution of the Natural Science Association of Staten Island, and it became my duty under the law to administer those legal formalities which put an end to its long and honorable career. I feel no qualms of conscience at my participation in these transactions, nor have I a sense of blood guiltiness in consummating this process of dissolution. All that was best in the old Association was transferred into the new, stronger, more influential body, which I trust is now entering upon a career even more lengthy, honorable and useful than that of its predecessor.

The Staten Island Association of Arts and Sciences was incorporated on May 17th, 1905, by an Act of the Legislature of this State. The Act of Incorporation is Chapter 526 of the Laws of 1905. It is found in the printed Acts of the Assembly of the 128th Session in Vol. 2 at page 1190. The Charter thus granted was formally accepted at a general meeting of the incorporators on June 3d, 1905. A transfer of the property from the old to the new corporation as provided by law was effected on June 6th, 1905. The affidavit to that effect was made by the President of the old Association before Mr. Justice Kelly of the Supreme Court, was filed in the office of the Secretary of State on the 27th day of June, 1905, and under Section 6 of the Act of Incorporation the corporate existence of the old body ceased on that day.

The *Proceedings of the Natural Science Association of Staten Island*, therefore, ended June 3d, 1905, with Volume ix, which contained its proceedings from November 14th, 1903, to June 3d, 1905. Volume i of the *Proceedings of the Staten Island Association of Arts and Sciences* begins, therefore, with the meeting of June 3d, 1905.

This Corporation was duly organized under the law and has been in active operation ever since. Its publications up to this time have consisted of a brief historical statement, the Act of Incorporation, Consti-

tution and By-Laws, names and residences of the Board of Trustees, list of members, trustees, officers and standing committees, under one cover, so paged as to precede the publication of the regular Proceedings of the Association, which was issued on April 10th, 1906, beginning with the proceedings of the first meeting and ending with the proceedings of the meeting of December 6th, 1905.

This is the first annual meeting of the new corporation. The last annual meeting of the old body occurred on November 10th, 1904.

During the past year the trustees named in the Act of Incorporation attended to all business affairs of the Corporation, leaving matters of scientific and historical interest to be transacted at the regular monthly meetings of the members of the Association.

The particular aspect of the affairs of the Association may be gathered from the reports of officers and of the trustees already submitted. These will inform you of the membership, the finances, the work of your trustees, officers and standing committees, the condition of your museum and library, and other matters of business. It is not necessary for me to dwell upon them further than to remark that your membership was never larger or more fairly representative of the intelligence and standing of the community.

Your treasury has never been in better condition. Your business affairs have been looked after studiously and conscientiously on the part of the trustees, and were never more encouraging than at the present time.

Accessions to your scientific and historical collections have been numerous, valuable and interesting. Your library is constantly enlarging. The publication of your *Proceedings* has improved in style and substance. Your publications are more appreciated than ever, and new requests for them come with frequent recurrence from scientific bodies and libraries in all parts of this country as well as abroad. Among those seeking your publications are the Boston Public Library, the Public Library of St. Louis, the Library of McGill University of Montreal, and the Library of the University of Michigan. Requests frequently come in for back numbers of your *Proceedings*. Your exchange list includes libraries, associations and individuals not only in every quarter of this country, covering twenty-one different states, but in many parts of Europe, Canada, England, Scotland, Ireland, Germany, Russia, Sweden, Bohemia, Mexico, Brazil, Costa Rica and Uruguay. In these simple facts we may take a modest but natural pride, which should stimulate us all to render our *Proceedings* even more worthy of the appreciation and respect which they have so generally received.

During the past year we have had a number of interesting and instructive papers on various subjects from Mr. William T. Davis, Mr. Ira K. Morris, Mr. James Chapin, Dr. Arthur Hollick, Dr. Philip Dowell and others. Specimens have been presented for discussion at our meetings by Mr. Samuel R. Brick, Jr., Mr. L. W. Freeman, Mr. Charles A. Ingalls, Mr. Ira K. Morris, Mr. Alanson Skinner, Mr. William T. Davis, Mr. Stafford C. Edwards, Mr. E. C. Delavan, Dr. Philip Dowell and Dr. Arthur Hollick; and interesting historical documents have been exhibited and donated by Mr. Ira K. Morris, Mr. Leavitt C. Parsons and Mr. William H. Mitchell.

Informal addresses on divers subjects have been made by Messrs. Chapin, Davis, Hollick, Allen and Skinner, and we are greatly indebted to our recording secretary, Dr. Arthur Hollick, for the care that he has taken in compiling for our *Proceedings* memoranda of recent literature relating to Staten Island.

The Association has been hospitably and delightfully entertained at the homes of our members, Messrs. William Allaire Shortt, William H. Mitchell, Lester W. Clark, Sr., Read Benedict and Montague Lessler. To these gentlemen we owe, and I take the liberty of expressing for you, our sincere and appreciative thanks for the pains they have taken to provide us with these entertainments and for the uniform success that has followed their efforts. The President of the Association has also had the honor of having the Association meet at his home.

A full set of our *Proceedings* has been sent to the Borough libraries at Port Richmond and Tottenville.

The conditions of awarding the prize of \$10 a year, open to students of Curtis High School in our Borough, for work in natural science, have been determined by a committee consisting of Dr. Arthur Hollick, Dr. Philip Dowell and Mr. O. D. Clark, who were appointed by the President for that purpose.

The Rev. Ernest F. Neilson of Newburgh, N. Y., a former resident of our Borough, and one of the organizers of the Natural Science Association of Staten Island, has donated to our museum an interesting and valuable collection of shells, which has been gratefully accepted by the trustees.

The trustees have been greatly interested in the effort to secure accommodations from the City for our museum and library. This took the form of two propositions. One was to secure quarters in the new Borough Building at St. George, and the other was to apply to the City for land and an appropriation to erect a suitable building thereon for a lecture hall and space for the museum and library and rooms for

administration purposes. After careful consideration and consultation with the City authorities, it seemed best to confine our efforts for the present to securing quarters in the Municipal Building. Your President was accordingly authorized to take such steps on this account as he might see fit. In this direction, I have had correspondence and interviews with Hon. George Cromwell, President of the Borough, Hon. John J. Delany, Corporation Counsel, and with other City officials. I am glad to say that Mr. Cromwell has evinced a commendable interest and desire to help us in securing such quarters, and that we have had encouragement also from the friendly attitude of Mr. Delany and other officials.

Dr. Hollick and myself have inspected the room which Mr. Cromwell wished to assign to us upon getting the requisite authority. The dimensions of this room have been taken and those for show cases and other furniture have been prepared and submitted to the architect of the building for plans and specifications. I have on behalf of the Association, filed a petition with the Sinking Fund Commissioners for this room, to be leased to the Association at a nominal rental, as authorized by the law of incorporation. The real estate expert of the Comptroller, to whom the matter was referred by the Sinking Fund Commissioners reported back that in his judgment the application should stand over until after all the different departments of the City Government have found sufficient room in the Borough Hall for their needs, which will be about July 1st, 1906. This recommendation was approved by the Comptroller, and the report was accepted and action deferred as recommended. This report dated April 21st, 1906, may be found in the City Record for Monday, May 7th, 1906, where it is printed at length.

I have received a letter from the President of the Borough, requesting this Association to suggest historical matter for a tablet to be erected in the Municipal Building, memorializing important events in the history of Staten Island. I have assured Mr. Cromwell of the wish of the Association to aid in this matter, and I have appointed for this purpose, a committee consisting of Mr. Ira K. Morris, Mr. William T. Davis and Dr. Arthur Hollick, with the President as ex-officio member under the By-Laws. This committee has met and has requested its chairman, Mr. Morris, to make a report to the Association to-night.

In aid of our local history, I recommend that an additional standing committee be appointed for the purpose of accumulating historical documents, perpetuating the memory of historical events, acquiring mementoes of the past, and generally aiding in the preservation of land-

marks and in the development of local history. I also recommend that we add to the offices of the Association that of a historian, whose duty it shall be to prepare a record for the archives of the Association of contemporaneous local events and other matter deemed worthy of rescue from oblivion.

In conclusion I cannot too strongly urge the members of the Association to maintain their interest and efforts for the enlargement of its influence and the extension of its beneficent purposes. It is the special mission of the Board of Trustees at this time to accomplish these results by devoting to the enjoyment of the public the large and valuable collection of specimens owned by the Association, which is now and for some years has been practically on storage, of little use to the members and none whatever to the community. Our proffer to the City is to turn over our museum for public exhibition and our library for public use, if the City will supply the housing and the expense of care and preservation. So much and much more have been done for other Boroughs, and this Borough is not asking too much of the City when we petition for this modest concession to the civilization, the educational sense, and the refinement of our community.

We need something else than sewers to take the filth away. We need conduits for an elevating public enjoyment, an informing public education, an enlightening public opinion, developing moral virtues and gratifying intellectual aspirations. Opportunities along these lines are notably deficient in this Borough. If this Association, by working out the purposes of its incorporation, may bring to the community facilities required for its culture and social development, it will have conferred benefits that make it worth while to live, and will have introduced a new era full of honor to us and blessings to our posterity.

Dr. Philip Dowell exhibited specimens of ferns and read the following paper :

DISTRIBUTION OF FERNS ON STATEN ISLAND.

Year by year new tracts of land on Staten Island are divided into smaller plots, and fine pieces of woodland are cleared for commercial purposes. Hand in hand with the disappearance of the forests and the encroachments of the habitations of man the natural beauty of the Island is destroyed, and our native plants and animals vanish. Some of the wild flowers, which are prized for their beauty, like the trailing arbutus, and other plants used extensively for decorations, as the holly the running clubmoss, and several ferns, have been picked in large quantities and thus ruthlessly destroyed. Frequent forest fires destroy

large numbers of our native wild plants each year. Thus it happens that many of the plants which were originally listed in the Flora of Richmond County, New York, published by Hollick and Britton in 1879, with later additions, have been exterminated. And many of the plants then listed as common have now become rare. Thus several ferns that were formerly common on the Island are now only occasional or at best only frequent, such as the maidenhair, the ebony spleenwort, the silvery spleenwort, the marginal shield fern, and the beech fern.

The spinulose shield fern still occurs in the wooded portions of the Island, but it is very sparingly found in those pieces of woodland that are cleared of underbrush.

In spite of the devastation that is continually going on, the fern flora of the Island is still comparatively rich and varied, as will appear from this list.

The following ferns may be classed as common :

1. *Botrychium Virginianum* (L.) Sw.—Grape fern.
2. *Osmunda regalis* L.—Royal fern.
3. " *cinnamomea* L.—Cinnamon fern.
4. " *Claytoniana* L.—Clayton's fern.
5. *Pteridium aquilinum* (L.) Kuhn.—Brake.
6. *Asplenium Filix-foemina* (L.) Bernh.—Lady fern.
7. *Polystichum acrostichoides* (Michx.) Schott.—Christmas fern.
8. *Dryopteris Noveboracensis* (L.) A. Gray.—New York fern.
9. *Dryopteris Thelypteris* (L.) A. Gray.—Marsh fern.
10. *Dennstaedtia punctilobula* (Michx.) Moore.—Hay fern.
11. *Onoclea sensibilis* (L.)—Sensitive fern.

The following may be classed as frequent :

12. *Botrychium obliquum* Muhl.—Ternate grape fern.
13. " *dissectum* Spreng. (Perhaps better considered as a variety of the former.)
14. *Woodwardia areolata* (L.) Moore.—Narrow-leaved chain fern. (Abundant in places).
15. *Asplenium acrostichoides* Sw.—Silvery spleenwort.
16. *Dryopteris spinulosa* (Retz.) Kuntze.—Spinulose shield fern.
17. " " *intermedia* (Muhl.) Underw.
18. *Phegopteris hexagonoptera* (Michx.) Fee.—Beech fern.

The rest are occasional or rare.

19. *Polypodium vulgare* L.—Polypody. Rare. In the original list this fern was reported from Four Corners and Giffords. In the list of 1880-2 it was reported as found "sparingly near Silver Lake, Four Corners, Richmond, and top of Ocean Terrace." In the *Proceedings* of May

1904 (vol. ix, no. 7), Mr. William T. Davis reported it as "now nearly exterminated on our Island," and that he had found it growing at the base of a tree back of Richmond. Since then Mr. Davis and I have found a few small patches of the fern on rocks by the side of the south branch of New Springville Brook, between New Springville and Richmond, and one little clump of it on a small rock on the County Farm. Last summer I found another clump of it in Darcey's Woods near Richmond Turnpike; also on a rock and on a level with the surrounding soil surface. The larger boulders or rocks that are raised considerably above the surrounding surface are too dry for this fern on Staten Island, because the forests have been more or less cleared by the axe or by fire.

20. *Adiantum pedatum* L.—Maidenhair. This is still quite abundant in Bloodroot Valley and in the ravine leading down to Reed's Basket Willow Swamp, but otherwise it is found rather sparingly.

21. *Woodwardia Virginica* (L.) J. E. Smith.—The larger chain fern was reported in the original list as "not rare." At present it is rather rare on the Island, because many of the localities where an occasional specimen may be found have been so much changed that they are no longer favorable to the growth of this fern. Mr. Davis pointed out to me a small patch of it between Mariners Harbor and Arlington. With Mr. Davis I found a few straggling plants of it near Oakwood and near Richmond Valley. I found a few plants of the fern northeast of Richmond toward New Dorp, and also on the margin of a pond in the woods on the east side of Bradley Road. It grows fairly abundant in two places, one about half a mile south of Mariners Harbor and the other between Merrell Avenue and Lambert's Lane.

22. *Asplenium platyneuron* (L.) Oakes.—The pretty little ebony spleenwort is now rather scarce. I have found it in the vicinity of Richmond and in Bloodroot Valley, but I have no record of finding it elsewhere on the Island.

23. *Dryopteris simulata* Davenp.—This has been called the Massachusetts fern and was first described in 1894. With Mr. Davis I found it growing near Richmond Valley in 1903. (*Proceedings*, vol. ix, p. 8.) Last summer I found a few plants of this fern near Linoleumville and also in a thicket of alders between Merrell Avenue and Lambert's Lane. A number of plants of this fern are to be found near South Avenue, a short distance south of Merrell Avenue.

24. *Dryopteris cristata* (L.) A. Gray.—The crested shield fern has been locally reported from Mariners Harbor. In the *Proceedings* of Nov. 1892, Dr. N. L. Britton reported it found near Oakwood by Mrs. N. L. Britton and made this comment: "This fern is exceedingly

rare on Staten Island, having been previously reported from but two localities, in one of which, the Clove Lake swamp, it has been since exterminated." My first find of this plant on the Island was in 1903, when I climbed with some difficulty over standing water and secured a specimen at the base of a tree stump in a swamp above Reed's Basket Willow Swamp. Since then a few plants have been found in various places, viz., Linoleumville, Bull's Head, New Springville, Richmond, Great Kills, Eltingville, Huguenot, Bradley Road, Darcey's Woods and Silver Lake.

25. *Dryopteris Clintoniana* (D. C. Eaton).—The Clinton fern was originally reported from "Clove Lake Swamp. Sparingly." I have found it near South Avenue, in Darcey's Woods, near New Springville, and back of Richmond.

This fern is intermediate in character between the *D. cristata* and *D. Goldieana* (Hook.) A. Gray, and it has been allowed to pass as a variety of the former, as first described by Professor Eaton. It differs from *D. cristata* in being larger, broader in proportion to length, having stipe more scaly, pinnae more slender pointed, pinnules more falcate, and especially in having the *sori near the midvein*. This latter characteristic alone ought to be sufficient to give this fern specific rank. Its resemblances to *D. Goldieana* seem to me usually more apparent than to *D. cristata*. It differs from *D. Goldieana* in being usually narrower in outline, in the more horizontal position of the pinnae, in having the pinnules less falcate and the stipe less scaly, and the *pinnae broadest at the base*.

I have usually found Goldie's fern in the same pieces of woodland as the Clinton fern; so also the crested fern. This fact and the fact that it is intermediate between the other two suggest that the Clinton fern might have originated as a hybrid, and that it stands in a relation to these similar to that of Boott's fern in relation to *D. cristata* and *D. spinulosa*.

26. *Dryopteris Goldieana* (Hook.) A. Gray.—Goldie's fern was first reported from near South Avenue in the *Proceedings* of Nov. 14, 1903 (vol. ix, p. 2). I have found it also near New Springville (2 places) and in Darcey's Woods. Mr. Davis discovered it in a swamp back of Richmond on one of our joint excursions.

27. *Dryopteris marginalis* (L.) A. Gray.—The marginal shield fern or evergreen wood fern is met with occasionally in our deeper woods, more especially near New Springville and Richmond. It is much prized for greens to go with cut flowers, and thus it has become more rare than formerly, when it was reported common. Last summer the

growth of this fern in the vicinity of New Springville was nearly destroyed.

28. *Dryopteris cristata x marginalis* Davenp.—This was first reported in the *Proceedings* of Jan. 1904 from near South Avenue. Before the end of last year (Dec. 27) I found a plant of this fern back of Richmond. I found quite a number of fine plants of this fern in a swamp near Suffern, N. Y., last summer, but to my knowledge the fern has not hitherto been reported as abundant anywhere; so we may count ourselves fortunate in having this fern on Staten Island.

29. *Dryopteris Pittsfordensis* Slosson.—This is my rarest find, thus far, on Staten Island, since this is a new fern of which only a few plants are known. It was first described in *Rhodora*, vol. vi, p. 75. (April 1904) and first reported from the Island in the *Proceedings*, vol. ix, p. 42. March 1905. Further comments on this fern are given by Professor L. M. Underwood in his *American Ferns*, vi, p. 197. 1906. (Reprint from the *Bull. Torrey Club*, vol. xxxiii, p. 197, 1906).

30. *Dryopteris Boottii* (Tuckerm.) Underw.—Boott's fern was reported in the *Proceedings* of Nov. 14, 1903 from near South Avenue (vol. ix, p. 2). Specimens have since been collected near Bradley Road, Bull's Head, Richmond, and in the previously mentioned swamp above Reed's Basket Willow Swamp. Some of these specimens belong to the form or variety of this fern described by someone, I do not know the author, as *Nephrodium Boottii* var. *multiflorum*. In our nomenclature this would read *Dryopteris Boottii multiflora*.

31. *Filix fragilis* (L.) Underw.—The brittle fern was originally reported as abundant near Egbertville. In the fall of 1902 I remember finding it along the north slope of Richmond Hill along the Egbertville Road. Last summer I searched this place without finding a single specimen of this fern where it seemed rather abundant in 1902. The only other place I have found the fern on the Island is Bloodroot Valley, where it is still quite abundant.

32. *Woodsia obtusa* (Spreng.) Torr.—This is one of my rarest finds on the Island; although the plant must have been not rare in the locality near Egbertville, from which it was reported in the original list without comment. Last summer I succeeded after careful search in finding one poor plant in the original locality on Richmond Hill near Egbertville, and one or two rather dwarf specimens in Bloodroot Valley.

The variety of *D. spinulosa* which I reported last year as var. *dilatata* I have purposely omitted since it is not authentic *dilatata*.

This gives us a list of at least 30 species of ferns from Staten Island

(31 if Clinton's fern be recognized as a species). If we consider the fact that the Island has no limestone outcrop we must admit that this is a good showing.

The Island is fortunate in having a few little tracts of woodland that have been spared from destruction. Portions of woodlands near New Springville, Richmond, Great Kills, and along South Avenue contain small areas where the woodman's axe has been sparing in its work and nature has been left more or less undisturbed. These are veritable garden plots for some of our native plants and animals. One of these favored spots is to be found near South Avenue, where I have found 23 species of ferns on an area of less than 1½ acres.

These are the ferns found on this area:

1. *Botrychium obliquum* Muhl.
2. " *dissectum* Spreng.
3. " *Virginianum* (L.) Sw.
4. *Osmunda regalis* L.
5. " *cinnamomea* L.
6. " *Claytoniana* L.
7. *Pteridium aquilinum* (L.) Kuhn
8. *Woodwardia areolata* (L.) Moore
9. *Asplenium acrostichoides* Sw.
10. " *Filix-foemina* (L.) Bernh.
11. *Polystichum acrostichoides* (Michx.) Schott
12. *Dryopteris Noveboracensis* (L.) A. Gray
13. " *Thelypteris* (L.) A. Gray
14. " *cristata* (L.) A. Gray
15. " *Clintoniana* (D. C. Eaton)
16. " *Goldieana* (Hook.) A. Gray
17. " *marginalis* (L.) A. Gray
18. " *cristata x marginalis* Davenp.
19. " *Boottii* (Tuckerm.) Underw.
20. " *spinulosa* (Retz.) Kuntze
21. " " *intermedia* (Muhl.) Underw.
22. *Phegopteris hexagonoptera* (Michx.) Fee
23. *Dennstaedtia punctililula* (Michx.) Moore
24. *Onoclea sensibilis* L.

A few rods away in the same piece of woodland I found also the maidenhair and the larger chain fern, making a total of 25 species on an area much smaller than Professor L. M. Underwood's noted Green Lake area near Jamesville, N. Y., where he found 28 species.

The sad part of this story is that the trees immediately adjoining this little area are being cut away; and unless some public spirited in-

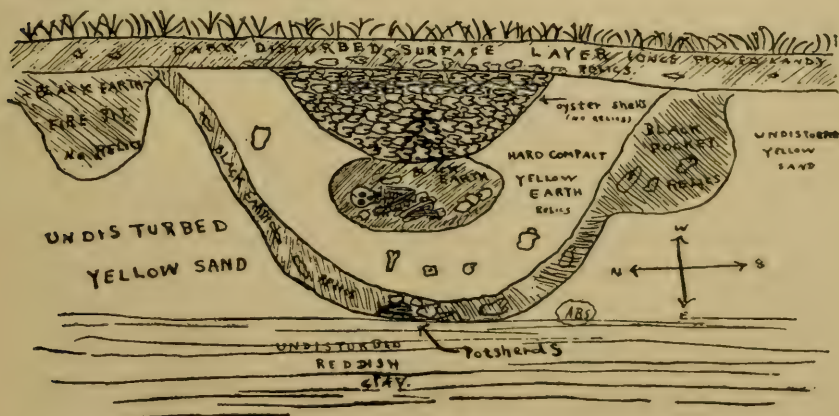
dividual or body take immediate steps to preserve such a remnant of virgin forest on the Island, this piece of woodland will share the fate of the others. Some day we will have portions of the Island set apart for parks, just as we have some already; but after the trees on an area have been cut down, and the native plants have vanished, there will be no opportunity to get a natural park, and our parks can at best be but imitations of nature like the great Central Park and Prospect Park.

Mr. Alanson Skinner exhibited a number of human bones and fragments of skulls and read the following paper :

AN INDIAN SKELETON FROM MARINERS HARBOR.

On May 12, 1906, while carrying on my investigations on the pre-historic Indian village site exposed by the building of Milliken Bros. iron foundry at Mariners Harbor, a grave was found exposed by recent enlarging of the railroad cut which runs through the plant.

The grave was found about 10 feet south of the first one which I had opened in that vicinity. It was about 7 feet broad by 5½ feet deep and of peculiar structure. A streak of black earth ran through the yellow sand and formed a bowl shaped pit. This streak was about 6 inches thick, broadening into pockets at both ends, and contained relics. At the bottom of the pit were some very large sherds, which were later restored and found to be the rim and most of the sides of a pot of typical Algonkin style. The bottom only is missing. On the sherds lay several stones, which indicates that the pot was whole or nearly so when placed in the grave, and that the stones had been cast upon it with the purpose of breaking it.



About 1 foot higher than the sherds and 3 feet to the west was found the skeleton of a person above average age, flexed as usual, heading

north, with the face to the east. The skull was crushed, probably by the weight of the earth. No relics were found with it, but an oyster shell lay upon the bones of the hands, which were folded before the face. Fire-cracked stones also lay upon and near the skeleton. A small pocket of blackened earth immediately surrounded the skeleton, but the other soil within the black boundary was hard, compact, yellow earth. About 8 inches above there was a deposit of oyster shells about $2\frac{1}{2}$ to 3 feet thick above the bones.

The Secretary read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND.

"Underground Water Resources of Long Island, New York. A. C. Veatch and others, *Professional Paper* No. 44, U. S. Geol. Survey 4to., pp. 394, pls. i-xxxiv and figs. 1-71 in text, Washington, D.C., 1906.

This paper begins with a chapter on the geology of Long Island as a necessary prelude to the intelligent understanding of the underground water condition. A discussion of the general principles relating to such waters is followed by an exhaustive discussion of the facts gathered in the course of careful investigations on Long Island, and the theoretical conclusions derived from them.

Data in regard to 919 wells are recorded and tabulated and their locations indicated on maps. From the information thus gathered and recorded the depths of the principal water-bearing horizons have been ascertained, the rate of flow measured, and the sources of supply more or less accurately determined or suggested.

Relatively shallow wells, confined to the superficial Tertiary and Quaternary deposits, were found to vary in their conditions according to local conditions, as would naturally be expected, and neither the depth at which water might be obtained, nor the amount of flow which might be expected, could be accurately predicted in a search for water in these deposits. The deeper wells, however, showed the presence of at least two well-defined water-bearing horizons, the lower of which, designated as the "Lloyd sand," belongs to the Cretaceous series of deposits. It is from the latter that most of the flowing wells of Long Island obtain their supply, and this horizon is shown to have a quite uniform dip or slope towards the southeast of about 80-100 feet per mile, with a strike approximately parallel with the coast line of the adjacent mainland.

On the north shore of the island, from Lloyd's Neck, westward, the top of this horizon is at a depth of approximately 200 feet below sea level while at Barren Island on the south shore it is at a depth of

about 650 feet. On Plate II is depicted a map of Long Island and vicinity on which the surface locations of the flowing wells are indicated and those of equal depth are connected by lines, thus producing a series of curves of equal depth; and these curves are theoretically extended across the lower bay and the south shore of Staten Island into New Jersey, where they are connected with similar curves of known equal depth. This map and the conclusions to be drawn from it are of special interest to us in connection with the problem of our local water supply, inasmuch as the south shore of Staten Island, from the Narrows to Princes Bay, is included between the theoretical 200 and 300 feet curves. It is well known that the same Cretaceous deposits, at least in part, extended from New Jersey through Staten Island to Long Island, and the facts now brought to light in this paper strongly indicate that, unless some local conditions obtain which are not apparent, the water-bearing Lloyd sand ought to be found in this region at a depth of 200-300 feet below sea level.

The probable presence of this water-bearing horizon has been frequently mentioned in connection with our local water supply problem, and it is interesting to recall that a calculation of its theoretical depth below sea level was made some years ago, before the Long Island data had been obtained, and that this calculation gave a depth of 280-312 feet (*Proc. Nat. Sci. Ass'n S. I.*, vol. vii. p. 19, June 10, 1899), which is exactly that now indicated under the authority of the United States Geological Survey.—A. H.

The meeting then adjourned.

Vol. I.

October-December, 1906.

Part III.

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS,

PUBLICATION COMMITTEE

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NEW BRIGHTON, N. Y.

[Issued April 17, 1907]



MEMBERS OF THE BOARD OF TRUSTEES, 1906-1907.

I.—ELECTIVE MEMBERS.

Howard Randolph Bayne, *president*.

Arthur Hollick, *secretary*.

Philip Dowell.	William Thompson Davis.
Daniel Delehanty.	Charles Arthur Ingalls.
John Blake Hillyer.	George Scranton Humphrey.
William Armour Johnston.	Charles William Leng.
Samuel Alexander Henszey.	John DeMorgan.
William Hinman Mitchill.	

II.—EX-OFFICIO MEMBERS.

The President of the Borough of Richmond,

Hon. George Cromwell.

The District Superintendent of Schools in the Borough of Richmond,
Darwin Long Bardwell.

OFFICERS OF THE ASSOCIATION, 1906-1907.

President—Howard Randolph Bayne.

First Vice-President—William Thompson Davis.

Second Vice-President—William Hinman Mitchill.

Recording Secretary—Arthur Hollick.

Corresponding Secretary—Philip Dowell.

Treasurer—John Blake Hillyer.

Honorary Curator—Charles Arthur Ingalls.

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

Vol. I.

October-December, 1906.

Part III.

REGULAR MEETING.

OCTOBER 20TH, 1906.

The meeting was held at the Staten Island Academy, New Brighton.
President Howard R. Bayne in the chair.

Twenty-one members were present.

The minutes of the annual meeting of May 19th, 1906, were read
and approved.

Mr. Joseph Judson Worrell, Tompkinsville, was elected to active
membership.

The Secretary made the following announcement: At the annual
meeting of the Association it was

Resolved: that the Board of Trustees be directed to consider and to
formulate a program to celebrate and commemorate the twenty-fifth
anniversary of the organization, on November 12, 1881, of the Natural
Science Association of Staten Island.

The resolution was considered and discussed by the Board of Trus-
tees and by the Executive Committee and the following general pro-
gram was adopted:

I. A subscription dinner on November 12th, 1906, to celebrate the
completion of twenty-five years of organized scientific work on Staten
Island, to which all members of the Staten Island Association of Arts

and Sciences shall be invited to subscribe, and to which a limited number of guests of the Association shall be invited to attend.

II. The preparation and publication, in pamphlet form, of the proceedings in connection with the dinner, including any addresses that may be delivered, to serve as a permanent memorial of the occasion.

III. The inauguration of a new, additional series of publications, to be known as the *Memoirs* of the Association, designed to include, in time, as complete a presentation of the natural history and antiquities of the Island as possible,—each number to be a complete monograph on some one subject.

The last section of the program was referred to the publication committee for consideration and report and the first section was referred to a committee of arrangements, consisting of Dr. Arthur Hollick, chairman, J. Blake Hillyer, William H. Mitchill, Capt. Daniel Delehanty, Darwin L. Bardwell, and the President, Howard R. Bayne, with full power to arrange all details for the proposed dinner and to carry the same to completion.

Dr. Arthur Hollick referred to the death of George Meredith Whitehouse, at Frankfort, Germany, on June 5th, last. Mr. Whitehouse was senior partner in the firm of Whitehouse and Co., bankers and brokers, in New York. He became a resident of Staten Island in 1875 and was elected an active member of the Association in 1895. Although never taking any part in our scientific work he was always pleased to continue his membership and to give support and encouragement to the object and aims of the Association.

Dr. Philip Dowell referred to the death of Oliver Durfee Clark, who was elected to active membership in the Association in 1904, and read the following memorial:

Oliver Durfee Clark, A. B., was born April 13, 1858, at Lakeville, Livingston County, New York. He graduated from the State Normal School at Geneseo in 1879 and from Rochester University in 1884. He studied also at Johns Hopkins University, New York University, and Teachers' College in New York City.

After his graduation he taught for some years, served as principal of the Union School at Victor, N. Y., and of the Academy and Union School of Baldwinsville, N. Y. In 1889 he became assistant teacher of natural science and mathematics in the Boys' High School, Brooklyn, and in 1895 he was promoted to first assistant, which position he held until he came to Staten Island. During his last two years in Brooklyn

he also served as principal of the Brooklyn Evening High School for Men. While in Brooklyn, Mr. Clark took an active interest in teachers' organizations, in which he held various offices. As a member of the committee on teachers' salaries he took a leading part in the campaign that resulted in the enactment of the Davis Law.

When the new high school building in the Borough of Richmond was nearing completion and the separate high school departments of Port Richmond and Stapleton were combined into one high school for the whole borough, Mr. Clark was appointed principal. He entered on his duties as principal of the George William Curtis High School February 1, 1904. He planned the organization well beforehand, so that from the first day of school in the new building, Feb. 11, the school was in running order.

He died at Lakeville, N. Y., on July 28, 1906. Funeral services were held at Lakeville and the interment was at Geneseo.

Mr. Clark was possessed of a strong will and determination, and his work was characterized by ambitious zeal for the success of his undertakings. In the death of its first principal Curtis High School lost a strong executive leader, who worked with unusual zeal for the success of his school.

Mr. Clark's active connection with our Association was only just beginning, but his ability and training justify the conviction that in his death we have lost a valuable member, whose influence in the advancement of the ideals of the Association would have been an important factor.

Mr. James Chapin exhibited a series of photographs and read a paper on

A BROOD OF BARRED OWLS AT GREAT KILLS.

On April 16, 1905, at Great Kills, Mr. Alanson Skinner pointed out to me a good-sized hole about twenty-five feet above the ground, in a large swamp oak, from which he had just seen a barred owl, *Syrnium nebulosum* (Forst.), fly; but as we could see no way to climb up we did not investigate further at the time. On April 8th of this year we were again in the same locality. Mr. Skinner saw a downy feather clinging to one side of the same hole, and when I kicked the base of the tree a barred owl flew out. By cutting down a small tree and placing its denuded trunk against that of the larger one we managed to climb up to the nest-hole.

The owls had put no nesting material in it, merely laying their three

white eggs on the mold in the bottom. Two of the eggs were already cracked preparatory to hatching, and through the hole in one of these could be seen the young bird. The nest contained, besides the eggs, a dead flicker and a phoebe.

On April 15th there were three young owls, covered with white down, and having rather imperfect facial disks. They kept their eyes shut during my visit, although I have been told they could probably open them at that age. Once one of them snapped its bill in the manner of adult owls. A piece of a ribbon snake, the bodies of a robin and a flicker, a white tail feather like a junco's, and some brown wing feathers that may have come from a house sparrow, were found in the nest.

On April 22d the down on the young owls showed dark bases, and a few brown feathers had appeared on their backs and wings. Their eyes remained shut a large part of the time, but their bills snapped frequently. The nest was littered with flicker feathers. On this visit and that of April 15th the old owl did not leave the nest until the tree was kicked.

Although the little owls were not so white on April 29th, they were still quite downy; the primary wing quills were beginning to appear, and the spurious wings were well developed. Their eyes were now open most of the time; the iris was dark brown, but the pupil, instead of being perfectly black, had a peculiar cloudiness, somewhat like that in the eye of an animal preserved in alcohol, although not so pronounced. On this date neither of the old owls was seen to fly from the nest, but one was afterward observed in the woods close by. A great many flicker feathers, some fish scales, and a pellet containing the skull of a star-nosed mole, *Condylura cristata* L., and pieces of the shell of some light-brown insect like a June-bug, lay in the nest.

May 6th was a cloudy day with occasional showers, and many trees by this time were well covered with leaves, so when I arrived beneath the nest, at about 5 p. m., it was quite dark. No old owl flew out of it, but after I had climbed up, both of them lit in neighboring trees and stayed there, hooting and snapping their bills until I left. The young owls had grown larger, and more dark feathers had appeared, giving the wing coverts, beneath which the secondaries were still concealed, a decidedly barred appearance. The hind legs of a gray squirrel, some wing feathers of a wood thrush, the body of a flicker, and a pellet containing bird bones and feathers and some pieces of insect shells, showed at least in part what they had been eating.

On May 13th only one young bird remained in the nest, another sat



VOL. I.



Nesting tree and young of barred owl.—Photographs taken May 13, 1905.

PLATE II.

in a small tree near by, and the third was probably in a similar position, although I could not see it. Their wing and tail feathers were quite long, but the birds seemed scarcely able to fly. The pupils of their eyes were still grayish. As on my preceding visit, the old owls sat a little way off and hooted. [See plate II.]

May 30th, on going through the same patch of woods, I heard an adult barred owl hoot and saw a young one. It seemed rather shy but never flew very far without alighting.

While watching the rearing of this brood of owls I repeatedly found that wing and tail feathers of their victims had been stuck point foremost into cracks and holes inside the nest or even into the mold which formed its floor. I had once before noticed the same thing in a hole in a tree that seemed to have been inhabited by screech owls. The parent barred owls were often chased by crows and blue jays after being scared off the nest, and once one seemed to be attacked by a red-shouldered hawk.

Mr. William T. Davis exhibited specimens and read a paper on

THE INFLUENCE OF WINTER ON THE HIGH-WATER SHRUB.

In our *Proceedings* for June 10th, 1893, it was shown that the high-water shrub, *Iva frutescens* L., which grows so abundantly along many of our salt water creeks and ditches, had been killed down to the ground by the previous severe winter. In June, 1905, following an equally cold winter, these shrubs were examined, and it was found that in nearly every instance the old wood was entirely dead and the bushes were forced to send up new shoots from the roots. This summer, after the warm winter of 1905-6, our creeks and ditches presented a very different appearance from what they did in June, 1905, for the *Iva* bushes, with the exception of having the tips of the stems and branches winter killed, commenced growing where they left off the previous year. Indeed any one acquainted with the sensitiveness of *Iva frutescens* to the cold winters could tell quite readily by an examination of the bushes in summer the character of the preceding winter, and also whether there had not been a very cold winter for several years. This of course pertains to the latitude of Staten Island, for in the South the high-water shrub grows to greater dimensions.

SPECIMENS EXHIBITED.

Mr. William T. Davis exhibited tadpoles and young frogs raised from tadpoles, representing the tree frog *Hyla andersonii* Baird, pre-

served in formalin, and a living adult male of the species, together with two living specimens of *Rana virgatipes* Cope, which may be called the "carpenter frog" by reason of its peculiar note resembling the pounding of a hammer on a board. All the specimens were obtained at Lakehurst, N. J. They were made the subjects of articles published in the *American Naturalist* for November-December, 1904, and November, 1905, and additional observations are shortly to appear in the same periodical.

Mr. Davis and Mr. Alanson Skinner exhibited a joint collection of the turtles of Staten Island, consisting in part of living specimens and in part of preserved specimens, together with specimens of eggs of several of the species.

Mr. Skinner also exhibited Indian relics obtained from the site of Milliken's factory at Mariners Harbor, consisting of the major portion of a straight clay pipe, an object not common in this region, a pin or awl made from a deer antler, and a spine of the sting ray, *Dasyotis* sp., numerous specimens of which latter were found there.

Mr. Ira K. Morris presented a Bible, found by Mr. Joseph B. Pierce in the loft of the old County Poor House, bearing the imprint "Printed and sold by Collins, Perkins, and Co., New York, 1807." From an inscription in the front and from other facts ascertained in connection with it, it was evident that it had been at one time the property of the old Dutch Reformed Church at Richmond, now utilized as a wagon factory.

RECENT LITERATURE RELATING TO STATEN ISLAND.

I.—"The Occlusion of Igneous Rock within Methamorphic Schists, as Illustrated on and near Manhattan Island, New York." Alexis A. Julien. *Ann. N. Y. Acad. Sci.*, vol. xvi³, 1906, pp. 387-446, pls. v, vi.

This is essentially a lithological contribution, which a lithologist only is competent to adequately discuss. It is of especial interest to us, however, for the reason that the serpentine or soapstone rock of Staten Island is utilized as a subject of description and analysis, and in consequence the local references are both numerous and important.

The author begins by defining the term "occlusion" as "foreign masses, completely engulfed and enwrapped, whose constituents are consequently in a state of reaction and interchange with those of the surrounding country rock, and of general absorption into it." The term is used in order to distinguish this phenomenon from that of inclusion or

enclosure, which refers to fragments of foreign rocks merely imbedded within sedimentary, metamorphic, or igneous rocks, or to microscopic enclosures within rocks and minerals. Examples are given of occlusions on Manhattan Island and in Westchester County, and the phenomena in connection with them are discussed.

The rock outcrops which we have always called serpentine or soapstone, in the vicinity of New Rochelle, Hoboken, and on Staten Island, are referred to by the author as "so-called serpentine" and are discussed as occlusions of "serpentinoid," in connection with the associated gneisses, schists, and granites, and its probable influence as an easily eroded rock, in the formation of river valleys, in the vicinity, is suggested, especially the valley of the lower part of the Hudson between Manhattan Island and Hoboken.

In regard to the Staten Island area the author states that the thickness has been estimated at "less than 100 feet!" It is unfortunate that the source of information in connection with this statement is not given, as all surface indications, and such facts as are available from the records of well borings, show a greater thickness ("A One-Hundred-and Fifty-Foot Well in the Soapstone." L. A. Camacho, *Proc. Nat. Sci. Assn. S. I.*, vol. vi, Dec. 11, 1897, p. 45, and a record of 600 feet in a well at New Dorp, given by Lewis Woolman in *Ann. Rept. State Geol. N. J.*, 1899, p. 132, noted in *Proc. Nat. Sci. Assn., S. I.*, vol. vii, Oct. 13, 1900, p. 46.

The specific gravity of two specimens from "the point north of Tompkinsville" are given as follows: "Dark gray amphibolite, 2.863; light gray tremolite schist, 2.844."

The author assumes that the main mass of our serpentine rock overlies the pegmatite granite which outcrops on the shore near the Tompkinsville station of the Rapid Transit RR., but says: "Its contact with this later intrusion would not necessarily indicate its lower limit."

References to the work of several investigators on the microscopic examination of our rock are cited, and the results of personal examinations of the Hoboken rock are given.

The genesis of serpentine rock in general is next discussed, and the theory of its origin by alteration of a sedimentary rock is dismissed with the brief sentence: "There is no longer need of discussion of this view." Almost equally brief are the discussions in relation to its possible derivation by direct serpentinization of dolomite and by alteration of amphibolized dolomite,—both of which theories are regarded as not supported by the facts.

An exhaustive discussion of the chemical and mineralogical charac-

teristics of serpentinitoids next follows, in order to prove the author's view that they must be regarded as derived from ultra-basic igneous rocks. In this discussion a table of analyses of samples from various localities is given, which includes one of "Dark green serpentinite," from Castleton Corners, with a specific gravity of 2.55, made by G. A. Goodell, as follows:

SiO ₂	36.72
Al ₂ O ₃	1.06
Cr ₂ O ₃	0.49
Fe ₂ O ₃	6.59
FeO	1.53
MgO	29.09
CaO	9.95
H ₂ O	14.54

From this analysis the author deduces the probable mineral constituents to be

Serpentine, with villarsite and talc	41.06
Diallage, with amphibole and bastite	41.05
Brucite, with bronzite	7.91
Chlorite	2.79
Dolomite	1.32
Chromite	0.77
Magnetite	0.20
Water	4.38
Moisture	0.52

and infers "that in the rock from these localities serpentine plays only a secondary part. Only confusion can result from designation of the mass as a rock serpentine on the ground of resemblances in chemical composition and physical characteristics. Varieties of such imperfect serpentinitization should be preferably discriminated as serpentinitoids, in accordance with Von Drasche's excellent suggestion."

In discussing the origin of the probable igneous rock from which the present serpentinitoid was derived the author says: "In the Staten Island rocks the composition is allied to that of combination of olivine and bronzite with diallage. The predominance of amphibole rich in lime and magnesia, with traces of pyroxene, olivine, and bronzite, suggests derivation directly from a basic hornblende schist, derivative in its turn from an ancient diallage-, bronzite- or enstatite-rock, passing at one point at least into peridotite."

The theoretical alteration of the original igneous mass into schists, and the subsequent progressive alteration of the component minerals of

the schists, are fully discussed, ending with a discussion of the final processes of weathering and superficial disintegration and dissociation of the rock into ferruginous quartz and limonite, which is such a prominent feature on Staten Island. Mention is also made of the "occasional slight concentration of chromite, magnetite, and perhaps spinel," and "talcose and chloritic alteration of lime and magnesia carbonates, in particles and veinlets of calcite, dolomite and hydromagnesite, with concentration on Manhattan Island, at West 59th Street, as opicalcite in cavities of the serpentinitoid."

The granite on the shore at Tompkinsville and beneath the water at the mouth of the Kills near St. George is accepted as evidence of "an extensive pegmatite intrusion underneath the serpentinitoid ridge." In regard to the associated gneiss or schist, denominated "gneissoid granite," the author says: "The latter structure, probably marginal, must have resulted from movements while the igneous mass was still in partially molten condition."

The granitic and gneissic composition of the reefs and islets in New York harbor is mentioned and the inference is deduced that "the basic intrusion [the present serpentinitoid rock] in the gneiss, now forming the ridge on the west bank of the Hudson, was followed, as on Manhattan Island, by intrusions of pegmatite. These found the tough material of the overlying basic sill impenetrable, except perhaps on the north line of the present Kill van Kull. Along this plane of weakness, after elevation, the ensuing erosion of the acid rock resulted in excavation of the mouth of the Kill and in separation of part of the serpentinitoid ridge, on Staten Island, from its continuation on the mainland at Jersey City and Hoboken."

The concluding part of the paper deals with general descriptions and comparisons of the serpentinitoids and their associated rocks in neighboring states and the discussion of the former volcanic activities which must have prevailed in the region.—A. H.

II. "On Cretaceous *Pityoxyla*." E. C. Jeffrey and M. A. Chrysler. *Bot. Gaz.*, vol. xlii, 1906, pp. 1—14, pls. i, ii.

In this paper, in addition to the description of a specimen from Scituate, Mass., the authors include the results obtained from microscopic examinations of lignites obtained from the clay beds of Kreischerville. Three different genera were identified in the material collected there: *Araucarioxylon*, *Cupressinoxylon*, and *Pityoxylon*. Specimens in the latter genus are made the special subjects of the paper, and a new species is described and figured under the name *Pityoxylon*

Statenense, from its occurrence on Staten Island. This generic name is the one which is used to designate fossil pine wood, and it is of interest to note that in many of the specimens examined amber was found enclosed in the lignite, "both in the translucent shining condition and in the dull ochraceous modification. In the latter state it is particularly conspicuous on account of the contrast in color with the black lignite, and may be made out, not only in the form of pockets and nuggets, but also as fine yellow threads or streaks corresponding to the normal resin passages of the wood."

Fascicles of pine needles and numerous cone scales were also found associated with the lignites, representing several different species, but apparently the wood was all of the one species described.

The paper also includes quite a full discussion of fossil pine woods in general, with references to sources of information, and full credit is given to one of our members for having first made known the possibilities of the Kreischerville deposits and for assistance and cooperation in securing material for study.—A. H.

III. "On the Founding of Colonies by Queen Ants, with Special Reference to the Parasitic and Slave-making Species." William Morton Wheeler. *Bul. Am. Mus. Nat. Hist.*, vol. xxii, 1905, pp. 33-105, pls. 8-14.

Three views taken at Mariners Harbor, Staten Island, of the large mound nests of *Formica exsectoides* Forel, are given in this interesting pamphlet. These mounds formed part of the same colony, and one was particularly worthy of note, as the recently constructed mound still had the stems of the dead bushes standing. Another showed about its base a rather wide zone of the grass that these ants permit to grow on their mounds. The building operations of this colony have been interfered with since the photographs were taken, by the erection of a house on part of the ground they occupied, and some of their mounds have been destroyed.—W. T. D.

IV. "The Frog Book: North American Toads and Frogs with a Study of the Habits and Life Histories of those of the Northeastern States." Mary C. Dickerson. 8vo cloth, pp. 253, pls. 112 and illust. in text. Doubleday, Page & Company, New York, 1906.

This admirable book forms one of "The Nature Library" series that has now reached its twelfth volume. The popular demand for these books is one of the encouraging signs of the times. Of particular local

interest in The Frog Book are figures 1, 2, and 3 of color plate VI, and the five figures on plate XLVII, which represent a tree frog, *Hyla versicolor* Le Conte, from our Island. One of the finest colored plates in the volume is plate VII, which gives four figures of the female *Hyla andersonii*, collected at Lakehurst, N. J., and exhibited before this association on October 15, 1904. It was also commented upon in the *American Naturalist* for November-December, 1904. *Rana virgatipes* Cope, also from Lakehurst, N. J., is shown on color plate XIII, and plate LXXXIV.—W. T. D.

The meeting then adjourned.

REGULAR MEETING.

NOVEMBER 17TH, 1906.

The meeting was held at the residence of Mr. William H. Mitchill, New Brighton.

President Howard R. Bayne in the chair.

Twenty-two members were present.

The minutes of the regular meeting of October 20th, 1906, were read and approved.

The following were elected to active membership:

Louis Axt, Port Richmond.

Claude T. Benjamin, New Brighton.

John F. Gould, Port Richmond.

J. Randolph Grymes, New Brighton.

Harlow McMillen, Castleton Corners.

George L. Mitchill, New Brighton.

David Rabinowitz, New Brighton.

Victor H. Reichelt, Stapleton.

Gordon Thompson, Mariners Harbor.

The Secretary read a communication from N. Taylor Phillips, secretary of the Commissioners of the Sinking Fund, enclosing a certified copy of the following resolution:

"RESOLVED, That pursuant to the provisions of section 7 of chapter 526 of the laws of 1905, the President of the Borough of Richmond be and is hereby authorized to provide Room No. 309 on the third floor of the Borough Hall, in the Borough of Richmond, for the use of the Staten Island Association of Arts and Sciences, for the occupying and maintaining of the Museum Collection and Library of said Association; said permission and assignment to continue during the pleasure of the Commissioners of the Sinking Fund."

The committee of arrangements for the 25th Anniversary dinner submitted a report on the work of the committee and the results attained.

The following resolutions were adopted:

Resolved: that the report of the committee of arrangements for the 25th anniversary dinner be accepted and approved, and that the Association express its thanks to the committee for its labors, and congratulations for the successful results of the same.

Resolved: that the committee, acting in conjunction with the publication committee, be directed to prepare and have printed an edition of 1,000 copies of a special memorial number of the *Proceedings*, to contain the addresses delivered at the dinner, together with such other facts in connection with the occasion as they may consider desirable.

Mr. Ira K. Morris, for the committee on historical tablet in the Borough Hall, submitted a report, including the following list of historical dates and events selected and approved for inscription on the tablet:

- 1609—Discovery of Staten Island by Henry Hudson.
- 1612—Dutch Block-house erected at The Narrows.
- 1613—Settlement of Oude Dorp by Dutch.
- 1624—Civilized Local Government recognized.
- 1630-36-41-57-70—Successive purchases of Island from Indians
- 1650—Stony Brook settled by Waldensians.
- First church on Island, erected at Stony Brook.
- 1660—Fresh Kill settled by Huguenots.
- 1664—Dutch Government supplanted by English.
- 1668—Staten Island separated from New Jersey.
- 1682—Settlement of Cucklestowne (Richmond).
- 1683—Stony Brook made County Seat—until 1729.
- First County Court House, erected at Stony Brook.
- Organization of Richmond County.
- 1728—Erection of second Court House, at Richmond.
- 1729—County Seat removed to Richmond.
- 1776—Arrival of British Army on Staten Island.
- Declaration of Independence announced at New Dorp.
- Battle of Long Island planned at New Dorp.
- British-American conference at Billopp House.
- 1778—Court House and Dutch Ref. Church burned by British.
- 1783—Evacuation of the Island by the British.
- 1794—Erection of third Court House, at Richmond.
- 1812—Rebuilding of British Forts by Americans.
- 1860—First steam railroad on Staten Island.
- 1858—Burning of Quarantine Hospitals.
- 1883—Bi-centennial celebration of Richmond County.
- 1886—Rapid Transit Railroad opened for passenger traffic
- 1889—Erection of Achter Kill bridge.
- 1891(?)—First electric railroad on Staten Island.
- 1898—Staten Island incorporated in Greater New York.
- 1906—Municipal Ferry established.

Mr. Morris stated that a number of additional dates and events, which the committee had listed, were omitted by reason of lack of space on the tablet, and suggested the desirability, if found feasible, of having the tablet on the opposite side of the hallway utilized for the inscription of such additional dates and events as the committee were prepared to submit.

The following resolutions, amending the By-Laws, were adopted:

Resolved: that By-Law IV be amended by adding a new section as follows:

Sec 6. *Tenure of Office:* Each officer shall hold office until his successor is elected and has qualified.

Resolved: that section 2 of By-Law V be amended so as to read as follows:

Sec. 2. *Annual Meeting:* The annual meeting of the Board of Trustees shall be held on the first Saturday after the annual meeting of the Association.

Mr. William T. Davis exhibited a skin of a barn owl, *Strix pratineola* Bonap., loaned by the American Museum of Natural History, together with pellets and preserved specimens of meadow mice and read the following paper:

THE BARN OWL ON STATEN ISLAND.

There is a barn on the south side of our Island, containing a pigeon loft, but the pigeons have long since gone and the place has been tenanted for many years by a pair of barn owls, *Strix pratineola* Bonap. As is well known, owls of this species keep very close during the day, so that no one would suspect, unless he were abroad at night and heard their peculiar screaming cry, that these rare birds dwelt in the vicinity.

On the fifteenth of last September I climbed as silently as I could to the pigeon loft, but the owls heard me coming and flew to the neighboring trees. On a lower shelf from the one they occupied I found four dead mice laid in a pile, and I was told that on another occasion they had eight others arranged in the same manner. One of the four mice found on the shelf was very large for *Microtus pennsylvanicus* (Ord), and while it may be that species, the authorities to whom it has been shown are not sure of its identity. It is now in the collection of the American Museum of Natural History.

On account of their mouse-catching habits these owls are very useful about a barn or farm, for while the farmer is asleep they serve him

greatly in the preservation of his crops, and it has been truly said that during all of their wanderings they are aiding mankind, their only enemy.

On the occasion of my visit I collected a number of pellets or rejects of these owls, and there were remains of a great many others near by. From these pellets I have raised the Tineid moth, *Trichophaga tapetzella* Linn., but I found no *Trax* beetles, as discovered in pellets found under trees on several previous occasions. The tapestry moth, *T. tapetzella*, is one of the true clothes moths and is described in *Circular* No. 36, second series, U. S. Department of Agriculture, Division of Entomology; also in the *Canadian Entomologist* for September, 1882, where it is stated that the "larva in Europe feeds on animal matter, pelts, carpets, and also on dried plant substances, forming a gallery of the substance on which it occurs, thus destroying much more than it eats." The tunneling habit of the larva can be well seen in the pellets exhibited. Dr. Dyar and other authorities regard this moth as rare in the United States.

The owls were again visited on the thirteenth of October, but as on the previous occasion, they heard me coming and flew away, though I was careful and made as little noise as possible. On the eleventh of November, with Mr. James Chapin and Mr. Alanson Skinner, I visited the owls for the third time, and while I climbed to the loft my companions stood outside and watched the hole from whence the owls would fly. As before, the owls heard me coming, and one walked out on the perch and stood in the light where my companions could see it well before it flew off to a neighboring tree. It was then discovered that another owl was hiding behind one of the rafters, and on two occasions it came from its retreat and walked about so that we could examine it closely, but it seemed to be anxious to hide behind a beam rather than to fly out into the daylight. Its gait was nervous and jerky, and it would stand for a moment and regard us and then hasten to get behind the beam again. It is certainly a queer-visaged bird, is the "monkey-faced owl." It is also sometimes called "golden owl," for its plumage is very beautiful.

Last spring and summer these owls raised a considerable number of young. On the top shelf of the pigeon loft the female laid seven eggs, which were hatched at various times, and later some eggs were laid on the next shelf below among the pellets and other refuse littering the place, for these owls build no regular nest. They live in holes in banks and in hollow trees and in buildings even in towns. A pair has nest-

ed for some years in one of the towers of the Smithsonian Institution, Washington, D. C. The barn owl of Europe is the "moping owl" of Gray's Elegy, that lived in the "ivy-mantled tower." In *Bird-Lore* for May-June, 1905, Mr. Wm. Dutcher has an "Educational Leaflet" on the "American Barn Owl," and the results are given of an examination, by Dr. Fisher, of 675 pellets from the owls in the tower of the Smithsonian Institution. It was found that they had destroyed over 1,700 meadow voles, mice, rats, and shrews. At a future date a note may be presented on the pellets of our Staten Island birds.

Mr. John Irving and Mr. Wm. A. Galloway, the protectors of the barn owls mentioned in this note, fully appreciate the services the birds render, for they catch more rats and mice than do the family cats. It is to be hoped that the birds will not be molested, but that they will continue to inhabit the old-time pigeon loft, where they have dwelt for so many years.

SPECIMENS EXHIBITED:

Mr. William T. Davis exhibited photographs of large bowlders and other natural objects, taken last March on Staten Island by Mr. Herman Stutzer, in which the following subjects were included:

Two views of the large boulder known as "Sugar-loaf Rock," standing in the field at the corner of Howard Avenue and Richmond Turnpike.

Boulder, almost as large as the latter, in the Cunard estate on Grymes Hill.

Boulder lying in Willow Brook.

Boulders on the bank of Willow Brook.

Boulder on the bank of New Springville Brook.

View of Willow Brook and one of Willow Brook millpond.

The clump of river birches, *Betula nigra*, L., at Watchogue.

The above photographs are particularly timely, for the reason that within the past few years many of our large bowlders together with the old stone walls have been blasted and broken up for road macadam.

Mr. James Chapin exhibited skins of the following birds:

Red-breasted nuthatch, *Sitta canadensis* Linn., from Sullivan County, N. Y. A few individuals were seen on the Island this autumn.

Pine finch, *Spinus pinus* (Wils.), from the vicinity of Oakwood. The species was observed on the Island this year and in the winter of 1903-04.

Sharp-tailed sparrow, *Ammodromus caudacutus* (Gmel.), for comparison with Nelson's sparrow, *Ammodromus nelsoni* (Allen), shot at Oakwood, Oct. 27th. This is the first record of the latter species on

Staten Island.

The Sharp-tailed sparrow breeds here, but Nelson's sparrow is only a bird of passage in this region.

Mr. Chapin also exhibited a skin of a Raccoon, *Procyon lotor* (Linn.) Storer, shot by some boys on April 20th, last, near Silver Lake. The fur was in excellent condition, without any indications that the animal had been in captivity.

Mr. John Rader presented a fragment of a gray granite boulder, obtained from an excavation at the corner of Clinton and Van Duzer Streets, Tompkinsville, and a sample of fine sandy clay, containing mica, from drift deposits encountered in an excavation on Richmond Terrace near Westervelt Avenue, New Brighton.

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. "Observations on the Occurrence of Boott's Fern." Philip Dowell. *Torrey*, vol. vi, 1906, pp. 205-209.

In this contribution the author gives, in considerable detail, an account of his personal observations on the distribution of *Dryopteris Boottii* (Tuckerm.) Underw., with incidental references to the allied species or varieties associated with it, *D. cristata* (L.) A. Gray, *D. spinulosa* (Retz.) Kuntze, *D. Clintoniana* (D. C. Eaton), *D. Goldicana* (Hook.) A. Gray, *D. intermedia* (Muhl.) A. Gray, and *D. marginalis* (L.) A. Gray, with comments on the subject of hybridity. Several Staten Island localities for the ferns are described, with notes on the accompanying vegetation, etc.—A. H.

II. "Perch Lake Mounds, with Notes on other New York Mounds, and Some Accounts of Indian Trails." William M. Beauchamp. *Bull. N. Y. State Mus.* No. 87. Pamph., pp. 82, pls. 1-12. Albany, 1905.

This contribution, although dealing primarily with Indian mounds in the vicinity of Perch Lake, Jefferson Co., N. Y., also contains many references to mounds and trails in other parts of the State.

In the "Addenda," on p. 50, is a brief reference to a communication from our fellow member, Mr. Alanson Skinner, relating to his finds of implements and other aboriginal relics on Staten Island, and on pp. 51, 52 is a list of the village and camp sites of the Island abstracted from Mr. Skinner's paper in the *Proceedings of the Natural Science Association of Staten Island* for April 11, 1903.—A. H.

The meeting then adjourned.

REGULAR MEETING.

DECEMBER 15TH, 1906.

The meeting was held at the Staten Island Academy, New Brighton. President Howard R. Bayne in the chair.

Twenty-three members were present.

The minutes of the regular meeting of November 17th, 1906, were read, corrected, and approved as corrected.

The following were elected to active membership :

Rev. J. Frederick Berg, Port Richmond.

William W. Capers, Jr., New Brighton.

Charles H. Ingalls, West New Brighton.

Charles R. Parmele, New Brighton.

Edward S. Rawson, West New Brighton.

Harry F. Towle, New Brighton.

Henry G. Woodruff, New Brighton.

Dr. Arthur Hollick referred to the death, on November 21st, last, of Mr. Augustus Acker, who was elected to active membership in the Association in 1902. Mr. Acker was best known in the business and political life of the Island but was glad to give his support to the Association in recognition of its value as an educational factor in the community, although he did not take an active part in its proceedings. His unvarying courtesy and cheerful, kindly disposition, were known to all, and these characteristics have received such recognition elsewhere, by those with whom he was more intimately associated, that further recognition on our part would be superfluous.

The Secretary called attention to the forthcoming meeting of the American Association for the Advancement of Science and affiliated societies in the city and distributed circulars of information, and also commented upon the proposed exhibition of the New York Academy of Sciences, at the American Museum of Natural History, designed to show recent progress in various lines of scientific research.

Mr. Alanson Skinner exhibited archeologic specimens, including a series of arrow points collected by Mr. Frank Speck, near Hackensack,

N. J., and a number of bone implements personally collected on Staten Island, and read the following paper:

A LIST OF THE COLLECTIONS OF STATEN ISLAND ARCHEOLOGIC
MATERIAL NOW EXTANT.

The collections of Staten Island archeologic material now in existence, or presumably so, may be divided into two classes, public and private.

By public collections we may understand those belonging to public institutions, in comparison with those in the hands of individuals.

The first of these classes is limited to but two examples, as far as the writer is aware, the most extensive from the standpoint of distribution being the collection of the Staten Island Association of Arts and Sciences. This includes about 400 specimens from many different localities and consists almost entirely of surface material and is therefore lacking in pottery, bone implements, and such other objects as are usually obtained only through excavation. It is very rich in grooved axes and celts. Among notable articles are a 12-pound grooved ax, a stone head, an almost perfect clay "trumpet" pipe, and numerous articles from sites long since obliterated.

In the American Museum of Natural History, New York City, is a fine series of articles collected at Burial Ridge, Tottenville, by Mr. Geo. H. Pepper. It comprises many skeletons and objects, particularly bone and antler arrow points, found in graves near the old Billopp House. Among the more notable objects are a perfect gorget, a perfect stone pipe of the monitor type, and numerous small shells perforated for suspension, probably, or used for a necklace.

Of the second class, or private collections, the first in point of size and value is that of the writer. It numbers about 1,500 specimens and represents the archeology of the north shore of Staten Island very fully, but it is poor as regards the sites on the south shore. It is notable for its number of grooved axes, pottery, and bone implements. The fragments of the rim of one pot collected at Mariners Harbor show rude, raised human faces. From the same site comes a vessel that has been restored but which lacks the base. There are a number of bone awls, a bone head, and several other objects, including the carved head of one, especially fine antler pin. The collection also includes many notable fragments of clay pipes.

The next collection in order is that of Mr. Wm. T. Davis, of New Brighton. It comprises about 250 or 300 specimens and is mainly a

surface collection, as are all those to be mentioned later. Among notable objects are two fine "sinew stones" or "bowstring reducers," a stone ax with ridges about the groove, found near the present Borough Hall, and an unusually large number of celts for a Staten Island collection.

Next in order comes the collection of Mr. Almer Decker, who resides in the old Cole place at Tottenville. It comprises objects mainly from the surface of the adjoining fields but has also many burial objects. While not catalogued or scientifically kept, it will repay study.

Mr. Isaiah Merrell of Watchogue was at one time the possessor of a fine series of objects collected in that neighborhood, but when the writer saw them, some years ago, they had dwindled away through careless keeping to about 50 specimens. Children had almost ruined a perfect hammer stone, and of a handful of fine steatite beads only one remained. There were several fine celts.

Mr. Charles Benedict of "Ravenhurst," West New Brighton, is the possessor of a small but choice collection, which is notable for its several fine grooved axes and a perfect stone gouge, the only one in existence from Staten Island, so far as known.

Mr. Isaac Wort, of Woodrow, has several fine axes of the grooved type, a fine double mortar, and many flint points, etc., but these objects form only the nucleus of a growing collection.

Mr. Charles Marlbor, of Port Richmond, has a number of interesting articles from the foundry site of Milliken Bros. at Mariners Harbor.

Mr. E. A. Stumpff, of New Brighton, also has a few objects from the north shore, as have many farmers and others who own land on the ancient Indian sites of our Island.

It is to be regretted that many notable objects have disappeared or been sold from this locality. A whole pottery vessel, recently found at Mariners Harbor, has passed out of this community, no one knows where; the Page collection of objects, from near Richmond Valley, vanished some years ago; and the Wainright collection of objects from Burial Ridge is now in other hands and is lost to the Island.

The writer begs to suggest that such of the remaining material as can be obtained, either as collections or single objects, be purchased by the Association before they are lost, sold, or stolen.

The day for field work, which might have been so well improved, is now practically over, for most of the sites have been or are being obliterated by factories or "South New York Destruction Companies," and in a few years there will be no way whatever in which to make up

for our lost archeologic opportunities.

Mr. William T. Davis exhibited specimens and read the following note:

THE SEVENTEEN YEAR LOCUST ON STATEN ISLAND IN 1906.

A brood of 17-year locusts, *Cicada septendecim* Linn., was expected in this vicinity during the past summer. It was not, however, to be expected that they would occur on Staten Island in any considerable numbers, for seventeen years ago, in 1889, only a pupa skin was found. (See *Proc. Nat. Sci. Assn. S. I.* for Feb. 10, 1894.) Slightly greater evidence was collected this season. In April, Mr. Alanson Skinner gave me a pupa that had been found under a stone in Clove Valley, and on June 10th we heard a 17-year cicada singing in a tree at Richmond Valley. It did not continue its song very long, and we were unable to capture the insect.

Elsewhere, at Eastport, Long Island, the cicadas were reported in some numbers (*N. Y. Times*, June 5, 1906).

SPECIMENS EXHIBITED.

Dr. Arthur Hollick exhibited a series of specimens illustrating the results obtained by macerating and sifting the fine lignitic debris from the Kreischerville Cretaceous deposits. The specimens included amber, leafy twigs, cone scales, etc., the latter often well preserved and easily sectioned so that they may be examined under the microscope. Photographic enlargements of some of these sections were shown.

Dr. Hollick stated that these specimens represented part of those prepared for the forthcoming exhibition of the New York Academy of Sciences at the American Museum of Natural History, to which reference was previously made.

Mr. James Chapin exhibited skins of the following birds:

Killdeer, *Oxyechus vocifera* (Linn.), shot at Oakwood, Nov. 3, 1906.

Olive-sided flycatcher, *Nuttallornis borealis* (Swains.), shot at Woodrow, Aug. 18, 1906.

Migrant shrike, *Lanius ludovicianus migrans* Palmer, shot at Prince Bay, Aug. 18, 1906.

Mr. Stafford C. Edwards exhibited gilled and porous specimens of the fungus *Daedalia contragosa* Pers., the object of which was to show the variety of form occurring in the same species. This fungus is quite common in the more or less lamellate forms, the porous forms occur-

ring less often. Some of specimens possess true gills, some are with dissepiments verging toward the porous, while others appear truly porous in character. Some immature forms were shown representing the gilled and the porous in the same specimen.

Mr. William T. Davis exhibited specimens of the brown-tailed moth, *Euproctis chrysorrhæa* Linn., and the gypsy moth, *Porthebria dispar* Linn.

Mr. Davis also commented on the fact that on December 15th the mild weather had caused ants to appear on the surface of the ground, and that on the same date the note of *Hyla pickeringii* Holbrook, had been heard.

The meeting then adjourned.

VOL. I.

January-May, 1907.

Part IV.

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS,

PUBLICATION COMMITTEE

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NEW BRIGHTON, N. Y.

[Issued September 20, 1907]

MEMBERS OF THE BOARD OF TRUSTEES, 1907-1908.

I.—ELECTIVE MEMBERS.

Howard Randolph Bayne, *president*.

Arthur Hollick, *secretary*.

Philip Dowell.	William Thompson Davis.
Daniel Delehanty.	Charles Arthur Ingalls.
John Blake Hillyer.	George Scranton Humphrey.
William Armour Johnston.	Stafford Clarence Edwards.
John DeMorgan.	Samuel Alexander Henszey.
William Hinman Mitchill.	

II.—EX-OFFICIO MEMBERS.

The President of the Borough of Richmond,
Hon. George Cromwell.

The District Superintendent of Schools in the Borough of Richmond,
Darwin Long Bardwell.

OFFICERS OF THE ASSOCIATION, 1906-1907.

President—Howard Randolph Bayne.

First Vice-President—William Thompson Davis.

Second Vice-President—William Hinman Mitchill.

Recording Secretary—Arthur Hollick.

Corresponding Secretary—Philip Dowell.

Treasurer—John Blake Hillyer.

Honorary Curator—Charles Arthur Ingalls.

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

Vol. I.

January-May, 1907.

Part IV.

REGULAR MEETING.

JANUARY 19TH, 1907.

The meeting was held at the Staten Island Academy, New Brighton
President Howard R. Bayne in the chair.

Sixteen members were present.

The minutes of the meeting of December 15th, 1906, were read, corrected, and approved as corrected.

The following were elected to active membership:

Frederick Coonley, M. D., West New Brighton.

Arthur M. Harris, West New Brighton.

Michael J. Kane, Stapleton.

Lewis Nixon, Tompkinsville.

Mr. Wm. T. Davis called attention to the death, on January 3d, of Mr. Richard Fair, who was elected to active membership in the Association on January 20th, 1906.

Mr. Davis exhibited a quantity of chert fragments and read the following paper:

A CACHE OF INDIAN FLINTS.

Many Indian implements have been found at Watchogue, and it is evident that in old days the sand dunes along the edge of the salt meadows and handy to what are now known as Old Place, Mark's and

Maggie's creeks, were much frequented by the aborigines. Most of the timber has been cut from these sand hills, some of which are now under cultivation, while others have lapsed into a semi-wild condition. Where the timber is gone the sand is shifted about by the wind and rain, and the arrowheads and other stone implements, that once belonged to the Indians, are thus brought to view.

While Mr. Alanson Skinner and I were looking for implements last year we noticed on the side of one of these sand hills several pieces of chert that had been split from the original mass of rock by some Indian, for they bore evidence of preparation and all were of the proper size for making arrowheads. Upon digging into the sand the 75 pieces of chert here exhibited were found together, where they had evidently been buried long ago by some Indian, who had failed to call for them. Most of the flints are about two inches long and from one-half to three-quarters of an inch in thickness, and in many instances the sides and ends have been squared off. It is evident from an inspection of the collection that the arrowhead manufacturer would be obliged to make points of very different shapes; he would clip out long and slim arrowheads or broad and triangular ones according to the chert in hand.

The interest in these prepared stones does not lie in the work bestowed upon them, though some skill was used in splitting them from the original mass of rock, but rather are they interesting from the fact of their having been buried together and thus exhibiting at this late day a custom of safe deposit storage by their one-time owner.

Mr. James Chapin exhibited a skin of the northern pine mouse and one of the common meadow mouse, for comparison, and read the following memorandum:

A STATEN ISLAND RECORD FOR THE NORTHERN PINE MOUSE.

Although originally described from Long Island, where it is said to be abundant, and having a range extending from Connecticut to Illinois, the northern pine mouse, *Microtus pinetorum scalopsoides* Aud. and Bach., has been captured but once on Staten Island, as far as I can ascertain. This first specimen was found dead in a field at Woodrow, by Mr. Isaac E. Wort, on January 6, 1907. The pine mouse is said to dislike stony, wet, or clayey soils, because of the difficulty of burrowing in them, and for this reason it probably inhabits only those parts of Staten Island where a sandy soil predominates, as at Tottenville, Rossville, and Watchogue; but careful search in those localities would perhaps show it to be quite common there.

Mr. Stafford C. Edwards exhibited specimens of oak wood serving as the host of a fungus and read the following memorandum:

AN INTERESTING STATEN ISLAND FUNGUS.

These specimens are pieces of oak wood containing mycelia and fruit disks of *Chlorosplenium æruginosum* (Oeder) De N., concerning which fungus the following is quoted from Freeman's "Minnesota Plant Diseases," p. 257: "The mycelium penetrates deeply, being especially prominent in the spring wood. It colors the wood a beautiful, deep verdigris green, varying in shade in the different parts. It is more abundant in the summer wood, thus accentuating the grain. The rot works very slowly. Wood, so colored by artificial infection, is used in the arts in the manufacture of Tunbridge ware. It is also used for the extraction of the pigment which resides both in the mycelium and the adjacent walls." The green coloring is well shown in these specimens. This fungus belongs to the Ascomycetes, the upper surface of the copper-green ascocarps bearing the sacks containing the spores. The fruit disks I have found but once on Staten Island, at Great Kills. Prof. Underwood says in his "Moulds, Mildews and Mushrooms" that they are not common.

NOTES AND COMMENT.

Mr. Wm. T. Davis exhibited acorns, hickory nuts, and cocoons, showing the work of squirrels in their search for insect larvae, which was made the subject of an article entitled "Insects as the Food of Squirrels" in the *Canadian Entomologist*, vol. xxxix, Jan. 1907, p. 16. Reprints of the article were distributed by Mr. Davis.

Dr. Arthur Hollick remarked on the meat-eating habit of a chipmunk which he had in captivity for many years and whose longevity was attributed to the occasional diet of meat which it enjoyed. A note on the subject was published in *Science News* for January, 1879.

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. "The Cretaceous Flora of Southern New York and New England." Arthur Hollick. *Monographs U. S. Geol. Survey*, vol. 1, 4to. cloth, pp. 219, pls. i-xl, Washington, Govt. Printing Office, 1906.

This volume is the final result of about fifteen years of persistent systematic work by the author in his investigation of the Cretaceous fossil flora of Staten Island, Long Island, Block Island, Martha's Vineyard, Nantucket, and the Elizabeth Islands, together with incidental

correlation work northward on Cape Cod and southward in New Jersey. In the introductory chapter is included an account of the previous work of others in the region, and their conclusions, which is of interest historically and also in showing the evolution of scientific thought and the changes that have taken place from time to time in the interpretation of facts during the past one hundred and thirty years.

Numerous references to Staten Island may be found in the text, and one of the quotations is an abstract from the first number of the *Proceedings of the Natural Science Association of Staten Island*, issued November 10, 1883, describing the discovery of fossil leaf impressions on the shore at Tottenville.

The importance of fossil plants in determining the geologic age of strata and in correlating them is emphasized throughout and is indeed one of the main objects of the monograph. A table of correlations on page 29 gives a condensed epitome of the views of a number of recent authorities and the conclusions of the author. The entire insular flora is regarded as included in the Raritan and Cliffwood formations, with possibly some of the Mattewan, and to be Cenomanian and Senonian in age.

Two hundred and twenty-two species of fossil plants are described and figured, of which Staten Island is represented by six from Arrochar, five from Princes Bay, one from Richmond Valley, thirty-six from Tottenville, thirty from Kreischerville, and one from Green Ridge. The descriptions and figures of these were based upon the specimens in our museum, and among these the following type specimens may be noted: *Myrica Davisii*, *Myrica Hollicki*, *Platanus aquehongensis*, *Pistacia aquehongensis*, *Acer minutum*, *Kalmia Brittoniana*, *Phyllites poinsettoides*, *Williamsonia Riesii*, *Carpolithus euonymoides*, *Carpolithus vaccinioides*, and *Rhizomorphs*.

It is unfortunate that the text of this work was prepared previous to the recent extensive discoveries at Kreischerville, which have added many more species and have still further demonstrated the scientific value of our local Cretaceous deposits.

A. H.

The meeting then adjourned.

REGULAR MEETING.

FEBRUARY 16TH, 1907.

The meeting was held at the residence of Mr. Howard R. Bayne, New Brighton.

President Howard R. Bayne in the chair.

Thirty-two members were present.

The minutes of the meeting of January 19th, 1907, were read and approved.

Theodore Castle Leng, West New Brighton, was elected to active membership.

Mr. William A. Shortt read a paper on THE LEGAL STATUS OF MIRACLES AND METAPHYSICS, but did not present it for publication.

Mr. William T. Davis exhibited herbarium specimens of a number of recognized hybrid oaks and a newly discovered one, and read the following paper:

AN ADDITION TO THE LIST OF HYBRID OAKS.

Near Farmingdale, Monmouth Co., N. J., there is a piece of woodland containing many interesting hybrid oaks. The willow oak, *Quercus Phellos* L., as might be supposed from its known tendency to cross with other oaks, is one of the species prominent in the several combinations observed. There are present a number of large oaks of this species, also many scrub oaks, *Quercus nana* (Marsh.) Sarg., and fingered or Spanish oaks, *Quercus digitata* (Marsh.) Sudw.

Quercus nana x *Phellos* is recorded as an observed hybrid in Britton and Brown's "Illustrated Flora," and there are several small trees growing like *Quercus nana* that display the characters of both the willow oak and the scrub oak. These trees bear acorns, and the same branch often has leaves like those of the willow oak as well as many more having the characters of the scrub oak. The leaves have sharp bases in almost every instance and are white-downy beneath.

There are several other trees in the same woods, that while they undoubtedly have the willow oak as one of their parents are not related to the scrub oak but more probably to *Quercus digitata*. The leaves are white-downy beneath, three or four inches long, and of varying widths up to two inches. Some of them are like those of the willow

oak, and some are lobed, but the most noticeable feature is the rounded base. A rounded base to the leaf is not a usual character of either the willow oak or of the scrub oak, but is often quite prominent in the fingered oak, as is also the white pubescence on the under side of the leaves. The acorns of the scrub oak and of the fingered oak are of about the same size, but in many instances in the trees mentioned they have not as flat cups as in the willow oak.

On account of the above characters it is suggested that *Quercus digitata* \times *Phellos* should be given a place in the list of hybrid oaks.

A single hybrid oak with characters much like those just described was found with the Bartram oaks and other hybrids at Richmond Valley, Staten Island, some years ago, and commented on in the *Proceedings of the Natural Science Association* for October 1888. While the tree resembled those above mentioned, it may be stated that no specimen of *Quercus digitata* has been found in the vicinity.

It may be said in conclusion that what appears to be the difficulty in considering the so called Bartram oak, *Quercus heterophylla* Michx., is that two or more hybrids have been mixed under the same name. As proof of this we have only to consider the figure given in Sargent's "Manual of the Trees of North America" in connection with what we know to be the conditions at Richmond Valley, where the large, flat-cupped acorns borne by some of the hybrids, together with the shape of the leaves, indicate the cross between *Quercus Phellos* and *Quercus rubra*. Figures of some of these acorns by Dr. Hollick, may be found in the *Bulletin of the Torrey Botanical Club*, vol. xv, Dec. 1888, pls. lxxxiv, lxxxv, and compared with the figures by Sargent above mentioned.

SPECIMENS EXHIBITED.

Mr. Davis exhibited ears of pop. corn with mixed red and yellow grains of several colors, the result of cross-fertilization due to raising plants from red and yellow seed in close proximity.

Mr. Howard H. Cleaves exhibited a living short-eared owl, *Asio accipitrinus* (Pall.), captured at Princes Bay on February 10th.

Mr. Alanson Skinner exhibited and discussed examples of different varieties of Indian war clubs.

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. "The Wound Reactions of *Brachyphyllum*." Edward C. Jeffrey. *Annals Bot.*, vol. xx, Oct. 1906, pp. 384-394, pls. xxvii, xxviii.

This contribution may be regarded as supplementary to a previous paper on "Affinities of Certain Cretaceous Plant Remains Commonly Referred to the Genera *Dammara* and *Brachyphyllum*," reviewed in the *Proceedings* of April 21st, 1906. Both of these papers are of special interest to us, aside from their scientific value, for the reason that the lignitic material upon which they were based was collected at Kreischerville and has been exhibited and discussed at several of our meetings during the past two years.

The net results obtained by the author in his microscopic examination of *Brachyphyllum* are that the normal wood does not contain resin canals but that traumatic resin canals, represented by amber-filled interstices in the lignites, were produced as the result of wounds or injury to the wood. In this respect the genus differs from the living genera *Dammara* and *Araucaria*, although in other respects it has a woody structure which is distinctly Araucarian. Lignites of this latter type were obtained from the Drummond pit, however, which in all probability belong to *Araucaria* or some closely allied genus.

A. H.

II. Under the heading "Palaeobotanical Papers," in an unsigned account of the meeting of the British Association for the Advancement of Science at York, England, last summer, and published in the *New Phytologist*, vol. v, 1906, pp. 177-188, may be found the following note, on p. 186: "On Saturday morning [Aug. 4] a number of miscellaneous papers were taken [before Sec. K., Botany], among which were two important palaeobotanical communications." Of interest to us is the fact that one of these, by Dr. E. C. Jeffrey, on "The Structure and Wound-Reactions of the Mesozoic Genus *Brachyphyllum*," in all probability essentially the same as the contribution last reviewed, was likewise based upon the Kreischerville material. This material aroused great interest abroad and we are to be congratulated on having first brought it to light and on having duplicate specimens in our museum collection.

The subject is also briefly mentioned in *Nature*, vol. lxxiv, 1906, p. 576.

A. H.

The meeting then adjourned.

REGULAR MEETING.

MARCH 16TH, 1907.

The meeting was held at the residence of Mr. William Allaire Shortt, Tompkinsville.

In the absence of the President the meeting was called to order by the Recording Secretary and Mr. Shortt was elected chairman *pro tem*.

Eighteen members were present.

The minutes of the meeting of February 16th, 1907, were read and approved.

The following were elected to active membership:

William I. Seaman, New Brighton.

Clifford B. Griswold, New Brighton.

The Secretary called attention to the recent sudden death of Louis Balmat Baker, LLB., M. D., on Tuesday, February 26. Dr. Baker was elected to active membership in the Association on October 21, 1905. He was a regular attendant at the meetings and always expressed great interest in the proceedings. In his death the Association has lost a loyal and enthusiastic friend and supporter.

The Secretary announced that a public lecture under the auspices of the Association had been arranged for the evening of April 12th, at the Curtis High School, on the subject of forest preservation, by Hon. James S. Whipple of the New York State Forest, Fish and Game Commission, and that the President had appointed a committee of arrangements, consisting of Mr. Thomas A. Fulton, chairman, Mr. Chas. H. Ingalls, and Mr. George S. Humphrey, to attend to all details of the lecture.

Mr. Leopold A. Comacho read the following paper by invitation:

OBSERVATIONS ON TWO WATER SPOUTS IN RARITAN BAY.

On the 23d of June, 1906, I was invited by Mr. Frederick Baldwin to fish during the afternoon at Giffords. In accordance with our arrangement I met Mr. Baldwin at Giffords at two o'clock in the afternoon. He came around from New Brighton in his power-launch, an eighteen foot boat, and he had with him Allister Morris, a young man the son of a neighbor. They had had a rather strenuous time getting around on account of thunder squalls and had been obliged to run in to the pier at Midland Beach during one of the most severe of them.

We started out with bait and rods about 2:15 o'clock and fished for a short time off the point without success. We took up our anchor and went down to the old buoy on the edge of the Princes Bay channel and then ran in to the black buoy on the same channel.

It was then beginning to thicken up to the southeast, so that we again took up anchor and ran in to a point about one thousand yards off the Terra-Marine Club. About this time it was thick with clouds about two hundred feet above the surface. There was not much wind. The clouds were particularly thick over the red buoy, our second anchorage. It began to blow from the northeast and rain. It looked so threatening that we decided to run for shelter back of Tottenville. There was a large yawl running down just outside of us under jib and jigger.

With the rain came hail, at first in pieces about one-quarter inch largest dimension; afterwards these hailstones increased to about two in the shorter axis. They seemed to strike at about five or six feet apart and made holes in the water.

We were then running down the beach with the yawl outside of us. The wind had nearly all gone down. I was steering, young Morris was amidship, and Mr. Baldwin was watching the engine aft. We were in oil skins and huddled up into as small a space as possible, as those hailstones hurt when they struck. Mr. Baldwin was hit by one of them and had a lame shoulder for several days afterwards.

The atmosphere below the clouds was comparatively clear. Suddenly the clouds over the red buoy, before mentioned, began to revolve in the direction of the movement of the hands of a clock, in a circle of about two hundred to two hundred and fifty feet in diameter. These clouds let down a long finger of mist, this finger was met by a solid cylinder of water about forty feet in diameter and of the same height, out of the center of which another finger went up and met the descending finger from the clouds. The meeting of the two formed a complete water spout which went off to the southeast in most stupendous gyrations.

The yawl, being nearest to the point, dropped sails and anchor with the most extraordinary celerity, and Mr. Baldwin called out to me "Put the boat ashore. I never was very well acquainted with water spouts and don't want any closer knowledge of them."

The spout by this time had changed its direction of travel and was coming our way. I headed the boat for the beach. The spout after coming our way for probably a minute changed its course again to the

southeast and disappeared in the mist. We had this one in sight probably about five minutes.

We were still running for the beach when young Morris called out "There is another one." So there was. This one was a repetition of the previous one, although we saw more of it, and it was more perfect. By perfect I mean more perfect in shape. When you are in an eighteen foot boat half a mile from shore with eighteen or twenty feet of water between you and the bottom, no water spout can be perfect. The last spout disappeared also to the southeast.

We put the boat ashore and waited on the beach for the weather to clear a bit, and then ran home through the Kills.

I saw afterwards in the papers that the spouts had done much damage to fishing craft in the Shrewsbury region and that considerable loss of life had attended them.

The phenomena were discussed by Mr. Howard H. Cleaves, who remarked on the damage done by the hail to the windows of the S. S. White Dental Works at Princes Bay and to windows of a railroad train standing at Princes Bay station. Mr. Cleaves stated that the hailstones were irregular in shape, flattened, about three-quarters of an inch in diameter and composed of a nucleus of white ice with clear ice on the exterior. A supply was collected and utilized for household purposes by filling an ice box with them.

Mr. James Chapin exhibited a number of bird skins and read the following paper:

AN ORNITHOLOGICAL REVIEW OF THE WINTER OF 1906-07.

The bird-life of the vicinity of New York during the past winter has been doubly interesting; first, because of the mild weather in the early part of the season, and secondly, on account of the occurrence of several irregular winter visitors, namely, pine grosbeaks, *Pinicola enucleator canadensis* (Cab.), white-winged and red crossbills, *Loxia leucoptera* (Gmel.) and *L. curvirostra minor* (Brehm.) redpolls, *Acanthis linaria* (Linn.), and pine finches, *Spinus pinus* (Wils.).

The warm weather in the months of November and December, 1906, and most of January, 1907, besides delaying the departure for the South of some summer and transient birds, was also accountable for the occurrence, in the middle of winter, of a few others.

Some late records for birds passing Staten Island in the fall migration are as follows:

Grasshopper sparrow, *Coturniculus savannarum passerinus* (Wils.). Oakwood, Oct. 27, 1906.

Sharp-tailed sparrow, *Ammodramus caudacutus* (Gmel.), (6 individuals) Oakwood, Nov. 6, 1906.

Seaside sparrow, *Ammodramus maritimus*, (Wils.) Oakwood, Nov. 6, 1906.

Northern yellow throat, *Geothlypis trichas brachidactyla* (Swains.), Great Kills, Nov. 10, 1906.

Fox sparrow, *Passerella iliaca* (Merr.), Clove Valley, Dec. 21, 1906.

While I know of no flickers, *Colaptes auratus luteus* Bangs, actually wintering on the Island in the past season, yet I saw two on Nov. 30, four on Dec. 1, and heard one on Dec. 8, all in quite widely separated sections.

From Dec. 2 to 6, Bonaparte's gull, *Larus philadelphia* (Ord), was quite abundant in the upper New York Bay. On one trip across on the municipal ferry, I estimated the number seen as at least 150.

Again, on Dec. 15, I saw about 50 of these little gulls at Great Kills; and on Jan. 1, Mr. Howard Cleaves and I found them very numerous between Princes Bay and Great Kills. No more were observed, however, for the rest of the winter.

On Dec. 25, in a field near the Mill Road, New Dorp, there were two male and one female red-winged blackbirds, *Agelaius phoeniceus* (Linn.), and on Jan. 23 one male in the same place.

Mr. R. C. Murphy, of the American Museum of Natural History, saw a belted kingfisher, *Ceryle alcyon* (Linn.), on Jan. 1, at Princes Bay. Two swamp sparrows, *Melospiza georgiana* (Lath.), came under my observation, at Rossville, on Jan. 13, and at Mariners Harbor, Feb. 2; and two hermit thrushes, *Hylocichla guttata pallasii* (Cab.), Feb. 3 and 23, at Rossville and Richmond, respectively. Bluebirds, *Sialia sialis* (Linn.), were somewhat more common than usual, flocks of four or five at a time being seen quite regularly throughout the winter.

In the year 1891, and for several succeeding years, Mr. Wm. T. Davis found the Carolina wren, *Thryothorus ludovicianus* (Lath.), quite a common bird in many parts of Staten Island, especially near Richmond, but it has now become so rare that previous to this winter I had met with but two individuals, both in the Clove Valley. On Feb. 16, 1907, I had the pleasure of seeing two more on a hillside near Richmond.

Pine finches have been quite numerous; the first to be seen were in the Clove Valley, Oct. 22. In the winter of 1903-04 there was a sim-

ilar visitation of these finches, but in greater numbers. The beach at Oakwood has seemed very attractive to them, for there they could find abundant food in the seeds of a large goldenrod, *Solidago sempervirens* L.

Probably the last time before this winter that redpolls visited this Island in large numbers was the winter of 1887-8, when they attracted the attention of Mr. Wm. T. Davis. On Dec. 1, 1906, near Woodrow, I was surprised by a solitary redpoll, but not until Feb. 10, 1907, at Watchogue, did I see any more. Since then, however, they have appeared at Richmond, New Springville, and in the Clove Valley, where the last were seen on March 9. The seeds of the white birch and alder seem to constitute a large percentage of their food, although the one seen on Dec. 1 was busy extracting the seeds of the sweet-gum.

While pine grosbeaks and crossbills were reported as quite numerous in Massachusetts and on Long Island, still my search for them on Staten Island was unrewarded. Horned larks, *Otocoris alpestris* (Linn.), were far less common this winter than during the two previous winters, only one flock of any size being observed. Mr. Cleaves reports snow buntings, *Passerina nivalis* (Linn.), at Princes Bay, January 6, February 12, and March 3, 1907, and on March 15, I saw two at Great Kills.

On the beach near Oakwood, March 2, 1907, I had two good views with a field-glass of a glaucous gull, *Larus glaucus* (Brunn.). Staten Island lies at the southern limit of this bird's winter range, and this is, I believe, the first one to be reported from here.

A few other birds of interest are: a saw-whet owl, *Cryptoglaux acadica* (Gmel.), and three northern shrikes, *Lanius borealis* Vieill., which were noted; but the most interesting records are doubtless those of the red-winged blackbirds, kingfisher, and the redpolls.

Mr. William T. Davis exhibited specimens and read the following paper:

NOTEWORTHY STATEN ISLAND INSECTS, WITH ADDITIONS
TO THE LOCAL LISTS.

Conocephalus lyristes Rehn. Two specimens of this cone-headed grasshopper, which is an addition to the local list, have been found on the Island. One was observed last August engaged in eating the seeds at the top of a tall culm of *Panicum Crus-galli* L. in a marsh near Long Neck.

Conocephalus atlanticus Bruner. Several specimens that appear to belong to this species, which resembles small *C. triops* L. (*C. dissimilis*

Sew.) have been found on the Island. This, with *C. lyristes*, is the sixth species of *Conocephalus* to be recorded from the Island.

Panchlora viridis Burm. A specimen of this delicately colored West Indian cockroach was presented to me by Mr. James Chapin. It was collected in a home on Staten Island, about the first of March, 1905. While the species is new to our local list, it has previously been reported from the city of New York and vicinity and is frequently imported with tropical fruit.

Nehalennia irene Hagen. Two examples of this small but brightly colored dragonfly were found on the Island in June. It is an addition to the local list.

Necrophorus pustulatus Hersch. This burying beetle was found beneath an electric light at Egbertville on July 19, 1905. The species is not mentioned in the New Jersey, Washington, or the Cincinnati lists of Coleoptera. It is, however, recorded from the vicinity of Buffalo, N. Y.

Anisotoma alternata Melsh is another rare beetle, also belonging to the Silphidae. A specimen was taken on the Island in October several years ago. This has been presented to Mr. Charles W. Leng, who identified the insect.

Polyphylla variolosa Hentz. A specimen of this large lamellicorn beetle was found near an electric light at Egbertville last June. Several specimens have been collected by Mr. Oscar Fulda about the lights at South Beach.

Terias nicippe Cram. This butterfly has not been recorded from the Island for a number of years, but during the summer of 1906 it was observed in several places. On June 24 a male was captured near New Springville; on August 4 another male was seen on Long Neck; and on September 9 four or five were seen flying about the plants of *Cassia marylandica* L. in Clove Lake swamp.

NOTES AND COMMENT.

Mr. Davis showed and explained a cheap and easy method of mounting and exhibiting insects by placing them on cotton batting in cigar boxes and holding them in place by the pressure of closely fitting glass covers secured by thin wire nails or pins inserted through the sides of the boxes.

Mr. George S. Humphrey presented a series of photographs of old Staten Island houses and landscape views taken by Mrs. C. W. Hunt.

Mr. Henry B. Brownell exhibited a unique fern dish made from the head, tail, and carapace of a South American armadillo.

The meeting then adjourned.

REGULAR MEETING.

APRIL 20TH, 1907.

The meeting was held at the residence of Hon. Lester W. Clark, New Brighton.

President Howard R. Bayne in the chair.

Twenty-two members were present.

The minutes of the meeting of March 16th, 1907, were read and approved.

The following were elected to active membership:

George H. Tredwell, Port Richmond.

John F. Braniff, New Brighton.

The public lecture committee reported that the lecture by Hon. James S. Whipple, Forest, Fish and Game Commissioner of the State of New York, on "The Preservation of the Forests," was given at Curtis High School on Friday evening, April 12th, before a large and appreciative audience.

The subject of the destruction of plant life on Staten Island by fire, indiscriminate cutting of trees and underbrush, etc., was discussed informally, and on motion it was

Voted: that the President be authorized to appoint a committee to consider and report on the subject of the destruction of our native vegetation and to suggest any measures that might be undertaken by the Association to prevent such destruction; said committee to consist of the public lecture committee and three other members.

The President appointed Hon. Lester W. Clark, Mr. William T. Davis, and Mr. James Chapin the three members to act with Mr. Charles H. Ingalls, Mr. George S. Humphrey, and Mr. Thomas A. Fulton as such committee, with Mr. Fulton chairman.

The Secretary called attention to the fact that the next meeting of the Association would be the annual meeting, at which five trustees were to be elected.

Voted: that the President be authorized to appoint a committee to suggest nominations for trustees to be voted for at the forthcoming annual meeting of the Association.

The President appointed Mr. Darwin L. Bardwell, Mr. Thomas A. Braniff, and Mr. William Mac Donald as such committee.

The following amendments to the By-Laws were adopted:

Resolved: that the final clause of Section 2, By-Law III, be amended so as to read as follows:

Any active member one year in arrears of dues shall by reason thereof stand suspended until such arrears of dues are paid, and if these are not paid within six months thereafter such member may be dropped from the roll by a majority vote of the trustees present at any meeting of the Board.

Resolved: that Section 6, By-Law III, be amended so as to read as follows:

Sec. 6. *Patrons:* Any person contributing at any one time one hundred dollars (\$100.00) to the general funds of the Association, or other property to the value of not less than two hundred dollars (\$200.00), provided such property be accepted by the Board of Trustees, shall be a patron, and on election by the Board shall enjoy all the privileges of life membership. Any active or life member may, upon making such contribution of money or other property, become a patron without thereby forfeiting any of the privileges of such membership.

Mr. William T. Davis exhibited specimens and read the following paper on

THE DISAPPEARING WILD PLANTS OF STATEN ISLAND.

In their preface to the "Flora of Richmond County, New York," published in 1879, Hollick & Britton state that "The Elliot Collection, referred to often, is a collection made for the late Dr. S. Elliot, of New Brighton, which is very valuable for containing many species whose localities are now destroyed, and the plants themselves extinct." In the list referred to there are a number of plants mentioned as then growing on the Island that today may be accurately commented upon in the words applied to the older Elliot collection in 1879.

In 1879 the juniper (*Juniperus communis* L.) is stated to be represented by "one tree of the erect variety" growing in the cedars near New Dorp. This tree lived until 1891. Mr. Sharrot has informed me that he remembered when junipers were numerous, the trees being scattered through the groves of red cedar on the south side of the Island.

In the *Proceedings of the Natural Science Association* for November 12, 1898, Dr. N. L. Britton gives an account of the finding of what presumably were white cedar logs, by Mr. John J. Crooke, in a swamp at Great Kills. This tree (*Chamaecyparis thyoides* L.) had not been reported as growing on Staten Island. Mr. Daniel Wandel has informed me that when he was a boy there were many white cedar trees growing in a swamp at what is now called Clifton. The swamp, since

it has been drained and built over, has received the nickname of "Poverty Hollow." Mr. Wandel stated that the white cedars grew also in another swamp to the southwest of the Meyer place on the Fingerboard Road. Mr. John L. Garretson, who died last August in the 92nd year of his age, also mentioned the circumstance of the white cedars growing near the Fingerboard Road. The southern white cedar grows in swamps much further north, so there is nothing remarkable in its having occurred on Staten Island.

Thoreau, in a letter dated May 22, 1843, and written from what is now called Emerson Hill, mentioned that the scarlet paintedcup (*Castilleja coccinea* L.) was "very common in the meadows." He adds "The whole island is like a garden, and affords very fine scenery." The scarlet paintedcup is said in the catalog of 1879 to be "very abundant in the Clove Lake Swamp." It is now exterminated, as far as known. Under this same head of exterminated plants that once formed part of our woodland flora, should probably be included the following species. The letters "E. C." after many of the names, indicate that the plants were recorded in the Elliot collection.

Coptis trifolia (L.) Salisb. Goldthread. "Near Silver Lake, 1864 (Elliot Collection), not since found.—'Ponds south of R. R. between Clifton and Garretson's' (I. H. Hall, in T. C. B.)."

Sarracenia purpurea L. Pitcher plant. Mr. John J. Crooke has informed me that he collected pitcher plants a number of years ago, in a swamp near Giffords.

Bikukulla Cucullaria (L.) Millsp. Dutchman's Breeches. Near Garretson's; not common in 1879.

Bikukulla canadensis (Goldie) Millsp. Squirrel Corn. E. C.

Dentaria diphylla Michx. E. C.

Drosera rotundifolia L. Round-leaved Sundew. Clove Lake Swamp in 1879.

Drosera longifolia L. Oblong-leaved Sundew. E. C. *D. intermedia* Hayne was probably the species found.

Geranium Robertianum L. Herb Robert. E. C.

Polygala lutea L. Orange Milkwort. E. C.

Polygala polygama Walt. E. C.

Galactia regularis (L.) B. S. P. Milk Pea. E. C.

Prunus americana Marsh. Wild Yellow Plum. Near Clove Lake; rather rare in 1879.

Prunus virginiana L. Choke Cherry. E. C.

Rubus cuneifolius Pursh. Sand Blackberry. Seems to have been

exterminated at the several stations where it occurred, near Tottenville.

Parnassia caroliniana Michx. Abundant in a swamp near Clove Lake in 1879.

Mitella diphylla L. Miterwort. E. C.

Aralia hispida Vent. E. C.

Linnaea borealis L. Twinflower. E. C.

Aster acuminatus Michx. Mountain Aster. E. C.

Gifola germanica (L.) Dumort. Cotton Rose. E. C. and State Flora.

Chiogenes hispidula (L.) T. & G. Creeping Snowberry. Rare. A small patch near Clove Lake in 1879.

Hudsonia ericoides L. Used to grow at Tottenville.

Gaylussacia dumosa (Andr.) T. & G. Grew at Tottenville in 1879.

Pyrola secunda L. Used to grow near Richmond Hill Road, west of Richmond.

Arctostaphylos Uva-Ursi (L.) Spreng. Bearberry. Sparingly near Tottenville in 1879.

Rhododendron maximum L. Great Laurel. Reported to have grown at Tottenville.

Ilex glabra (L.) A. Gray. Inkberry. In 1879 it was abundant near Clove Lake, but not common elsewhere.

Koellia incana (L.) Kuntze. Hoary Mountain Mint. E. C.

Asclepias quadrifolia Jacq. Four-leaved Milkweed. Described as frequent in 1879.

Menyanthes trifoliata L. Buckbean. E. C.

Aristolochia Serpentaria L. Virginia Snakeroot. E. C.

Habenaria psycodes (L.) A. Gray. Smaller Purple-fringed Orchis. Reported as rather common in 1879.

Pogonia ophioglossoides (L.) Ker. Rose Pogonia or Snakemouth. Clove Lake Swamp in 1879.

Corallorhiza odontorhiza (Willd.) Nutt. Two localities are given for this orchid in 1879.

Cypripedium reginae Walt. Showy Ladies' Slipper. Reported in 1879 as growing near the fort at Clifton.

Trillium erectum L. Ill-scented Wakerobin. E. C.

Melanthium virginicum L. Bunchflower. It was common in Clove Lake Swamp in 1879 and for some years after.

A number of the species mentioned above were confined to a single locality, but the list, which might be added to, is, however, sufficient to show that a considerable number of our woodland plants have been

exterminated since 1864 or thereabouts.

The work of destruction has gone on much faster in recent years, since our woodlands have been so often and unnecessarily burned over, and we have now a number of plants that are nearing extermination. Among these may be included *Aquilegia canadensis* L., *Angelica atropurpurea* L., *Diervilla Diervilla* (L.) MacM., *Gaultheria procumbens* L., *Epigaea repens* L. (Trailing arbutus), *Staphylea trifolia* L., *Asclepias variegata* L., *Orchis spectabilis* L., *Corallorhiza multiflora* Nutt., and *Tipularia unifolia* (Muhl.) B. S. P. Indeed it is quite likely that the last year or two has seen the extermination of some of these species.

During recent years *Hepatica Hepatica* (L.) Karst., *Kalmia latifolia* L., and *Ilex opaca* Ait., the American holly, have become very much reduced in numbers.

There are only a few trees of the hop hornbeam remaining, and most of the butternuts along Sandy Brook have been cut down. Some of the interesting hybrid oaks near Richmond Valley have also been used for firewood. Most of this destruction is wrought through ignorance, such as the burning of the woods, and often when a man acquires a piece of land, he first cuts down all of the native trees, plows it up, and then plants others, usually maples, which generally seem to be considered the most desirable. At the site of the Richmond Valley oaks a fine tree of the hybrid oak *Quercus Rudkini* was cut down and an ordinary tree planted in almost the same spot.

In 1879 five species of *Lycopodium* or clubmoss were recorded as occurring on the Island, and some of them were quite common even a few years later, but they were among the plants that were effected most disastrously by the repeated burning of the woods. *Lycopodium clavatum* L. has no doubt been exterminated, and *L. lucidulum* Michx. and *L. obscurum* L. have become scarce. *Lycopodium complanatum* L. is the most common of those remaining.

From the foregoing it will be seen that since 1864, or thereabouts, over forty species of plants, that once grew on the Island more or less plentifully, have been exterminated, and at the present day the destruction is going on faster than ever. It is an accurate statement that at least one species of woodland plant is lost to Staten Island every year.

Dr. Philip Dowell has well commented upon the distribution of our Staten Island ferns in these *Proceedings* for May, 1906, and has urged the setting apart of areas of woodland to serve as natural parks. The difficulty seems to be, however, that the average man is not acquainted with the wild plants and their requirements, and through ignorance de-

stroys them. Even if we should save some of the natural tracts it is to be feared that the necessity of adopting the policy of "Hands off" would not be appreciated by those in authority. It is generally considered that all parks must have something done to them, such as the cleaning up of the leaves or the cutting down of some of the trees, which of course endangers the life of the lesser plants and from our point of view makes the place less interesting.

The ideal way to treat a piece of natural woodland would seem to be to let it entirely alone, to get as many books as possible about what it contains and with these and observation make a study of what is sure to be an interesting fauna and flora. While this plan of dealing with Nature would seem to apply more particularly to private woodland, yet there is a successful natural park in the city of Portland, Oregon. The park board of the Macleay Park have "desired that not a fern, flower, leaf, twig, or branch of any name or nature be disturbed," and fortunately there are many citizens who approve of this plan. We quote from Mr. William Palmer's account of this park in *The Plant World*, for January, 1906: "An old resident of Portland had left the ground, less than two hundred acres, to the city on condition that a path should be maintained through its wilderness, but that the natural beauty should not be changed. The Park Board of the city, headed by the mayor, is evidently faithfully carrying out the intent of the donor. The watchman, deeply interested in the matter, keeps the path clear and as dry as possible, cuts partly through fallen logs, so as to permit easy stepping, removes stones, and trims the side of the path where the bank is steep; provides for the drainage across the path, especially where the ground is soggy, but invariably leaves everything untouched except in the narrow winding way."

With a park of this character on Staten Island, which would cost less to maintain than any other kind, we might at least preserve a small portion of our woodland flora, our native plants would not all die out, and we need not then average a loss of a species every year, as at present.

Mr. Davis also read the following notes on the

TIME OF ARRIVAL OF THE BARN SWALLOW ON STATEN ISLAND.

The following dates of arrival of the barn swallow (*Hirundo erythrogaster* Bodd.) at a barn on the south side of the Island, near Dongan Hills, have been furnished me by Mr. Wm. A. Galloway. I

regret to say that I neglected to inquire about the swallows for the years 1899 and 1900.

April 28, 1892.

" 25, 1893.

" 26, 1894. They commenced to sing on the 29th.

" 24, 1895.

" 20, 1896. Very warm.

" 24, 1897. Swallows seen on the 18th but they did not go in the barn until the 24th.

" 30, 1898. Flying about the barn. Cold for past week.

May 2, 1901. Late spring.

April 30, 1902. Seen flying about the barn, but did not go in.

" 30, 1903.

" 24, 1904.

Mr. Howard H. Cleaves exhibited a skin of a male woodcock and read the following paper:

A FEW NOTES ON THE AMERICAN WOODCOCK, *Philohela minor* (Gmel.).

This bird is known generally to a great many people in a vague sort of way, but few have become intimately acquainted with it. Exhaustive and accurate information relative to the habits and traits of the woodcock is far more difficult to accumulate than it is to record notes on birds that appear to us to be more numerous.

In the spring the woodcock returns from the South as soon as the frost is out of the ground, and is a resident until cold weather again returns in the fall. It begins to breed almost as early in the season as the barred owl and the American crow, and its nest is ten times more difficult to locate than either.

As a food and game bird the woodcock is very popular, which accounts for its rapid disappearance in the vicinity of New York.

Mr. William T. Davis captured a woodcock near Egbertville on the fourth of July, 1885, with an insect net. The bird apparently supposed itself unobserved, and sat still, as is the habit of the species, but in this instance it staid too long. The bird appeared to be in good health and flew away vigorously enough when released.

Perhaps the most singular habit which this bird has, and the one with which I wish particularly to deal, is the feat of soaring high in the air and then returning again to nearly the same place, apparently without any reason for doing so. In searching for information on this

question, I found that very little was said in regard to the details of this aërial performance. Wilson has recorded that the bird in rising from the ground forms a spiral and is occasionally heard to quack. This, however, does not give us a definite idea of what the bird really does, and it may be readily imagined that I recorded details almost to excess, when the opportunity recently presented itself to witness for myself this most interesting performance.

The following notes, taken in the vicinity of Princes Bay, are from my field book of this year.

March 22.—Up to date it had not been my privilege to witness the spring habit of the woodcock of rising into the air towards evening. Tonight, however, great pleasure was afforded me when I heard and saw several of these birds. Their regular note is a loose rattling buzz, which is uttered while they are on the ground. While I was standing on a low piece of ground overgrown with a second growth, my attention was attracted by one of these sounds. I approached to within 15 or 20 feet of the sound, when up flew the woodcock with a whistling of wings that could have been heard for some distance away. Up and up it went after leaving the earth, at a gradual slant of about 30 degrees, forming a spiral course that went from left to right. The whistling of the wings was continued. After mounting in this manner to the height of about 150 feet, it began, in addition to the wing sound, to utter a liquid, guttural note, which was slow at first but which seemed to reach a climax as the end of the upward spiral and the height of 200 or more feet were reached. In starting for the ground the bird stopped all of the whistling of wings and changed the other sound into a squeaking, guttural note, quite different from the first. It then simply closed its wings and made very steep, swooping dashes, which formed a reverse spiral. While dashing toward the ground in this manner it seemed to divide its squeaking and whistling notes into measures with each swoop. The bird which I first saw regained the ground after making eleven distinct drops from a height of some 200 feet. When it was two or three dives from the earth all sounds were stopped, and the bird fluttered softly through the second growth of plants to the ground. It almost immediately resumed its buzzing. Each buzz continued for about a second of time and was separated from the next by from 3 to 5, 25, or 30 seconds. By standing quietly I had not long to wait before I discovered that the birds would start up of their own accord and did not have to be approached, as I had first thought. At any time there could have been heard three or four woodcocks in the air, at different

stages of their spirals, while others could be heard buzzing on the ground. In no case was I able to discover a female near the spot from which a male had just flown, although, in one instance, while I remained very still, a male buzzed, flew into the air, returned to the same place and started buzzing again. This it repeated several times until I interrupted it, whereupon it came down some 50 yards away. While standing in another part of the swamp, I heard a bird in the descending stage of its performance almost directly over my head. Looking up, I sighted it, and strange to say, it seemed not to see me but lit 20 or 30 feet away and started to buzz. In another instance I fired a 25 calibre rifle at one when it was half way up, but neither the sound nor the ball showed any effect upon it, for it proceeded as before.

March 26.—I heard several woodcocks buzzing at half past six p. m. and tried the experiment with the rifle again. This time no birds were in the air when I fired, and the sound had the effect of quieting every buzz in the neighborhood. For 20 minutes I waited, and none started up again. Later, I heard two at eight o'clock p. m.

March 27.—Again I listened to the woodcock. One flew so close to me that I could see its long bill. It carried the bill with the tip pointing toward the ground almost at right angles with the body.

April 11.—At half past six p. m., I made my way toward the woodcock district, and could hear the birds when several hundred feet away. Watching one bird in particular, I decided to count the number of noises made by it each each time before flying into the air. I noticed that it returned to almost the same spot after going into the air; so, when it left the ground the next time, I ran to the place where I thought it would be likely to alight, and lay on the ground. Down it came and fluttered to the earth not fifteen feet away, beginning almost at once to buzz.

Some days before, Mr. James Chapin had told me that he was of the opinion that the woodcock makes an additional sound just preceding each buzz, and I found that this is quite so. It resembles very much a hiccough, and indicates, I think, that it is an effort for the bird to make this buzzing noise, for sometimes the hiccough is to be heard with no buzz following.

The bird to which I listened buzzed 16 times and then flew off. Returning, it increased the number to 23; the next was 33; then 45; then it came back and buzzed only 25; and the last time that I counted it buzzed 80 times before leaving the ground, and took three and one-half minutes to do it in. I might add that I counted 7 hiccoughs that

were not followed by any other sound while the bird was buzzing these 80 times.

Another interesting fact which appeared to be evident is that the bird did not seem to stand in the same place or position while buzzing. Some sounds were indistinct, and it was plain that the woodcock kept turning first in one direction and then another.

April 24.—At twenty-five minutes past seven p. m., I heard one woodcock only, and it continued its song for but a short time, and then I heard no more. It seemed that the season of song for the woodcock was waning, even as is the case with other birds when the breeding time comes on.

April 27.—At five minutes to seven p. m., I heard one bird buzz a few times, and then all was still, save for the woodfrogs and pickerings in adjoining ponds, and up to date (May 8) I have not heard another woodcock.

NOTES AND COMMENT.

Mr. Alanson Skinner exhibited specimens of moccasins made by the Seneca, Cayuga, Mohawk, Ojibway, Cree, and Sioux Indians, and discussed their several peculiarities of shape, embroidery, etc.

Mr. James Chapin exhibited skins of a young and an adult little green heron, *Ardea virescens* Linn., together with a nest, obtained from the vicinity of Green Ridge.

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. "Hybridization of Wild Plants." D. T. Mac Dougal. *Bot. Gaz.*, vol. xliii, Jan. 1907, pp. 11-44, figs. 1-4.

This contribution is not only one of general interest on the subject of hybridization among wild plants, but it is of special interest to us by reason of the discussion in connection with Bartram's oak (*Quercus heterophylla* Michx.), and the fact that the critical observations on this admitted hybrid, described and illustrated in this contribution, were based upon young seedlings raised in the New York Botanical Garden, from acorns collected at Richmond Valley, Staten Island, in October 1905.

The tree from which the acorns were obtained was one of the several first discovered by Mr. Wm. T. Davis, in 1888, and recorded in the *Proceedings of the Natural Science Association of Staten Island*, vol. i, p. 71, Sept. 8, 1888, many years before the subject of hybridization

had begun to receive the critical attention that has recently been given to it.

At that time the question of the hybrid origin of *Q. heterophylla* was yet open to discussion, but Mr. Davis and Dr. Arthur Hollick both declared their conviction that it must be a hybrid with the willow oak, *Q. Phellos* L., as one of the parents. The identity of the other parent remained in doubt for some time, but Dr. Hollick finally concluded that it was the red oak, *Q. rubra* L. (*Bull. Torrey Bot. Club*, vol. xv, Dec. 1888, pp. 308, 309), and in this connection the following discussion and conclusion by Dr. Mac Dougal, on pp. 50, 51, are both interesting and gratifying:

"About 75 acorns * * * were placed in the propagating houses of the New York Botanical Garden, with the result that 55 plantlets were available for study in December and January following. With the formation of the earliest leaves it became evident that a wide diversity of form of these organs and other qualities prevailed, as shown by the photograph taken in April [fig. 2].

"In May 1906 all of the plantlets were transferred to the experimental grounds, and as the development proceeded the diversity became still more marked. At the close of the season it could be seen that this group of plants included some which simulated *Q. Phellos* with its lanceolate entire leaves, while others were not separable from *Q. rubra*, the remainder being capable of arrangement in a series between these two poles. An examination of the literature disclosed the fact that the combined observations of the several botanists who have written on the subject refer to plants bearing almost the entire range of leaves noted in the cultures here described. In most of these accounts the leaves are said to be much like those of *Q. Phellos*, while some observations include notices of others which were broad lobed and notched, although most of these writers were extremely chary of identifying any of the forms with those of *Q. rubra*. It is to be noted, however, that as a result of the consideration of gross anatomical facts and distributional data, Dr. Hollick and other botanists had finally concurred in the general conclusion that the tree was in all probability a hybrid between the red oak and the willow oak.

"With our present available information concerning the behavior of hybrids this conclusion seems unavoidable * * * some of the individuals include so many of the qualities of the red oak and willow oak that the evidence is overwhelmingly in favor of the conclusion that the origin of *Q. heterophylla* is to be attributed to the hybridization of these two forms."

A. H.

II. In *Year Book* No. 5 of the Carnegie Institution of Washington, for 1906 [Washington, D. C., 1907], on p. 131, in the Report of the Department of Botanical Research by D. T. Mac Dougal, may be found a brief reference to the experiments in connection with the seedlings of *Q. heterophylla* noted in the preceding review and the conclusion there mentioned.

A. H.

The meeting then adjourned.

ANNUAL MEETING,

MAY 18TH, 1907.

The second annual meeting of the Association was held at the Staten Island Academy, New Brighton.

President Howard R. Bayne in the chair.

Twenty-three members were present.

The minutes of the meeting of April 20th, 1907, were read and approved.

The following reports were read, accepted, and ordered placed on file:

ANNUAL REPORT OF THE BOARD OF TRUSTEES.

The Board held five meetings, as follows: the annual meeting on May 26, 1906; stated meetings on October 6, 1906, January 5, 1907, and April 6, 1907, and a special meeting on November 22, 1906.

At the annual meeting officers of the Association were elected in conformity with Article II of the Constitution, and one vacancy in the Board, caused by the declination of Mr. Adolph Charles Knothe, was filled by the selection of Mr. John De Morgan.

One honorary member, Mr. Ira Konover Morris, and one corresponding member, Dr. Leland Ossian Howard, were elected.

The rules and regulations of the Board were amended in certain particulars, in order to meet contingencies that had not been originally foreseen.

Amendments to the By-Laws, which a year's experience showed to be necessary, were discussed by the Board, formulated, submitted to the Association, and adopted.

Negotiations with the municipal authorities, in connection with the housing, furnishing and maintenance of the museum and library of the Association, were continued. Formal permission was obtained from the Commissioners of the Sinking Fund and the President of the Borough to occupy the room in the Borough Hall assigned for the use of the Association. Plans for the museum cases and other furnishings have been prepared by the city architects and estimates obtained for the cost of construction. The matter of instalation and future maintenance is yet under advisement, as will be explained by the President in his annual address.

The several standing committees provided for under the rules and regulations of the Board transacted such business as came within the

scope of their respective duties, as may be learned from their reports appended.

The routine business of the Association was transacted by the officers, under the occasional advice or direction of the Board, and their reports will also be submitted to you this evening.

Respectfully submitted for the Board,

ARTHUR HOLLICK, Secretary.

REPORT OF THE EXECUTIVE COMMITTEE.

The Executive Committee held four meetings, as follows: July 17, 1906, December 1, 1906, March 9, 1907, and May 10, 1907.

All items of business referred to the committee by the Board, were acted on, and the following legislation was formulated and approved by the Board:

I.

Program for the celebration and commemoration of the twenty-fifth anniversary of the organization of the Natural Science Association of Staten Island.

(Printed in the *Proceedings*, October 20, 1905, and also included in the special Memorial Number of the *Proceedings*, issued March 15, 1907).

II.

Amendments to the Rules and Regulations of the Board.

Voted: that in order to provide for an order of business at the annual meetings of the Board the following amendment be made to the Rules and Regulations, under "II.—Order of Business:" At the annual meetings of the Board the first order of business shall be the election of officers.

Voted: that the following additions be made to the Rules and Regulations under "III.—Standing Committees:"

Museum and Library Committee: The museum and library committee shall consist of five active members of the Association. The committee shall have general charge of the museum and library. They shall determine the system of arrangement of the specimens and books and the methods of labeling and cataloging the same, and they shall formulate such rules as they may deem advisable for the care and use of them.

Accessions Committee: The accessions committee shall consist of three members of the Association. They shall endeavor to secure accessions of historical and scientific material for the library and museum, by inviting donations, by making exchanges of duplicate books and specimens, and by recommending to the Board of Trustees the purchase of any desirable material; and they shall inquire into the

value and authenticity of all such material and determine its availability.

[Extract from the minutes of the Executive Committee, July 17, 1906, and of the Board of Trustees, Oct. 6, 1906.]

III.

Amendments to the By-Laws:

Amendments to By-Laws IV and V were adopted by the Association November 19, 1906, and may be found printed in the *Proceedings*, vol. i, p. 84.

Amendments to By-Law III were adopted by the Association April 20, 1907, and may be found printed in full in the *Proceedings*, vol. i, p. 108.

IV.

Selection of delegates to represent the Association at scientific conventions:

Voted: that Mr. Charles W. Leng, Mr. William T. Davis, and Mr. Thomas Craig be selected as the delegates to represent the Association at the Seventh International Zoological Congress, to be held in Boston, August 19-23, 1907.

[Extract from the minutes of the Executive Committee, March 9, 1907.]

Voted: that Dr. Arthur Hollick be appointed the delegate to represent the Association in connection with the celebration by the New York Academy of Sciences, on May 23, 1907, of the 200th anniversary of the birth of Linnaeus, and that he be authorized to prepare the official document appreciative of the work of Linnaeus, as requested by the Academy in its letter of invitation.

[Extract from the minutes of the Executive Committee, May 11, 1907.]

HOWARD R. BAYNE, chairman.

J. BLAKE HILLYER.

WILLIAM H. MITCHILL.

CHARLES A. INGALLS.

ARTHUR HOLLICK, secretary.

REPORT OF THE AUDITING COMMITTEE.

The auditing committee held two meetings, one on May 26, 1906, at which the Treasurer's annual report was examined and found correct, and again on March 9, 1907, at which all of the Treasurer's books, accounts, and vouchers were subjected to careful examination and found correct to date, and a certificate to that effect was transmitted to the United States Guarantee Company.

GEORGE S. HUMPHREY, chairman.

CHARLES A. INGALLS, secretary.

REPORT OF THE PUBLICATION COMMITTEE.

The publication committee has not held any formal meetings during the year.

The following publications have been prepared and issued:

Proceedings, vol. i, part ii (January to May 1906, inclusive), pp. 21-70, pl. i and illust. in text. Issued July 9, 1906. Edition, 400 copies.

Id., part iii. (October to December 1906, inclusive), pp. 71-92, pl. ii. Issued April 17, 1907. Edition, 400 copies.

Id., Special Memorial Number, commemorating the celebration of the twenty-fifth anniversary of the organization of the Natural Science Association of Staten Island. Pamph., 8vo, pp. i-xl. Issued March 15, 1907. Edition, 1000 copies.

PHILIP DOWELL, chairman.

WILLIAM T. DAVIS.

ARTHUR HOLLICK, secretary.

ANNUAL REPORT OF THE TREASURER.

Debit and Credit Account.

Dr.

Balance on hand at date of last annual report	.	.	.	\$627.60
Since received:				
Membership dues	.	.	.	408.00
Subscriptions to 25th anniversary dinner	.	.	.	177.50
Interest on deposits	.	.	.	11.15
Subscription to <i>Proceedings</i>	.	.	.	1.50
				<hr/>
				\$1,225.75

Cr.

Printing <i>Proceedings</i>	.	.	.	.	.	.	\$252.50
Administration:							
Officers' accounts	.	.	.	.	.	.	77.83
Committees' accounts:							
25th anniversary dinner	.	.	.	.	.	.	259.45
Publication	.	.	.	.	.	.	22.21
Lecture	.	.	.	.	.	.	18.97
Accessions	.	.	.	.	.	.	14.50
Miscellaneous:							
Donation to Staten Island Academy	.	.	.	.	.	.	25.00
Premium on treasurer's bond	.	.	.	.	.	.	7.50
Subscriptions to periodicals	6.00

Janitor	5.00
Exchange on check10

 \$689.06

Balance on hand, May 18, 1907	536.69
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\$1,225.75

J. BLAKE HILLYER, Treasurer.

ANNUAL REPORT OF THE RECORDING SECRETARY.

Number of members on roll at date of last annual report, including	
2 honorary and 2 life members	129
Since elected, including 1 corresponding member	27
Deceased	5
Resigned	4
Declined election	1

On roll of membership at date, including 1 corresponding member,
2 honorary members, and 2 life members 146

ARTHUR HOLLICK, Recording Secretary.

ANNUAL REPORT OF THE CORRESPONDING SECRETARY.

Most of the correspondence received and answered has been in connection with inquiries concerning the publications of the Association.

The Association has one corresponding member, elected this year, Dr. Leland Ossian Howard of Washington, D. C.

PHILIP DOWELL, Corresponding Secretary.

ANNUAL REPORT OF THE HONORARY CURATOR.

Museum.

Three separate contributions to the museum collections have been made by three of our members, Dr. Arthur Hollick, Mr. John Rader, and Mr. Ira K. Morris, which include 15 specimens in geology and 1 in local history.

One loan collection of Staten Island minerals has been deposited with the Association by Mr. Theodore E. Smith of Watchogue Road, which consists of specimens from the limonite iron ore mines along Jewett Avenue near Richmond Turnpike.

One collection of North American violets, containing 150 sheets, has been added by purchase from Professor H. D. House of Clemson College, S. C.; and 14 sheets of violets from the vicinity of New York City have been presented by Professor House to the Association.

Several other valuable collections have been definitely promised as donations, provided the Association will arrange for their proper display and safe keeping. Under existing conditions, however, it has been impossible to accept these. The proper care of our collections has long since outgrown the voluntary labor of our members, and the employment of a competent curator, who should give his entire time to labeling, classifying, and arranging the material now in our possession, is imperatively needed. The necessity for larger quarters and more display cases scarcely requires comment, but these will be adequately provided if we be enabled to occupy the room assigned for our use in the Borough Hall and succeed in obtaining the cases already planned.

Library.

The growth of the library has continued to a most gratifying extent, although no effort has been made in this connection and but little has been done except to note and acknowledge the accessions, as follows:

By subscription:

American Naturalist, current numbers.

Psyche, current numbers.

By donation:

Science, current numbers.

Dr. Arthur Hollick.

Plant World, current numbers.

“ “ “

Reprints of papers by Dr. Arthur Hollick.

“ “ “

Bulletin American Mosquito Extermination Soc.

“ “ “

Bulletin American Geographical Society, current numbers.

Mr. Osborn M. Curtis.

Old Bible, dated 1807.

Mr. Ira K. Morris.

Photographs of Staten Island Scenery.

Mr. Herman Stutzer.

Photographs of Staten Island houses and scenery.

Mr. George S. Humphrey.

By exchange:

Academy of Natural Sciences of Philadelphia, Philadelphia, Pa.

Proceedings.

Academy of Science of St. Louis, St. Louis, Mo. *Transactions.*

American Academy of Arts and Sciences, Boston, Mass. *Proceedings.*

Augustana College and Theological Seminary, Rock Island, Ill.

Library Publications.

Boston Society of Natural History, Boston, Mass. *Proceedings.*

Brooklyn Institute of Arts and Sciences, Brooklyn, New York City.

Science Bulletin, Cold Spring Harbor Monographs.

- Bronx Society of Arts and Sciences, New York City. *Transactions*.
- Cincinnati Society of Natural History, Cincinnati, O. *Journal*.
- Colorado College, Colorado Springs, Colo. *Studies (Science Series, Social Science Series, Language Series, General Series)*.
- Colorado Scientific Society, Denver, Colo. *Proceedings*.
- Columbia University, Geological Department, New York City. *Contributions*.
- Connecticut State Geological and Natural History Survey, Hartford, Conn. *Bulletin, Reports*.
- Davenport Academy of Sciences, Davenport, Iowa. *Proceedings*.
- Elisha Mitchell Scientific Society, Chapel Hill, N. C. *Journal*.
- Entomological Society of Ontario, London, Ont. *Canadian Entomologist, Annual Reports*.
- Field Columbian Museum, Chicago, Ill. *Publications*.
- Geological Institute of the University of Upsala, Upsala, Sweden. *Bulletin*.
- Geological Survey of Canada, Ottawa, Canada. *Reports*.
- Geological Survey of Ohio, Columbus, O. *Reports, Bulletin*.
- Historical and Scientific Society of Manitoba, Winnipeg, Canada. *Annual Report, Transactions*.
- Instituto Geologico de Mexico, Mexico City, Mex. *Parergones, Bulletin*.
- Kaiserliche Leopoldinisch-Carolinische Deutsche Academie der Naturforscher, Halle, Germany. *Abhandlungen, Leopoldina*.
- Kansas Academy of Sciences, Topeka, Kan. *Transactions*.
- Linnaean Society of New York, New York City, N. Y. *Abstract of Proceedings*.
- Lloyd Library, Cincinnati, O. *Bulletin, Mycological Notes*.
- McGill University, Montreal, Que. *Department Classics (Applied Science, Botany, Chemistry, Engineering, Geology, Mineralogy, Ophthalmology, Pathology, Philosophy, Physics, Physiology, Zoology)*.
- Missouri Botanical Garden, St. Louis, Mo. *Annual Report*.
- Museo Nacional de Costa Rica, San José, Costa Rica. *Paginas Ilustradas*.
- Museo Nacional de Montevideo, Montevideo, Uruguay. *Anales*.
- Natural History Society of Glasgow, Glasgow, Scotland. *Transactions*.
- Natural History Society of New Brunswick, St. John, N. B. *Bulletin*.
- New York Academy of Sciences, New York City, N. Y. *Annals*.
- New York Botanical Garden, Bronx Park, New York City, N. Y. *Bulletin*.

Nova Scotian Institute of Science, Halifax, N. S. *Proceedings, Transactions.*

Oberhessische Gesellschaft für Natur-und Heilkunde zu Giessen, Giessen, Germany. *Bericht.*

Ohio State Archaeological and Historical Society, Columbus, O. *Quarterly.*

Ottawa Field Naturalists' Club, Ottawa, Ont. *Ottawa Naturalist.*

Public Museum of the City of Milwaukee, Milwaukee, Wisc. *Annual Report.*

Rochester Academy of Science, Rochester, N. Y. *Proceedings.*

Roger Williams Park Museum, Providence, R. I. *Bulletin, The Apteryx.*

Sapporo Natural History Society, Sapporo, Japan. *Transactions.*

Smithsonian Institution and U. S. National Museum, Washington, D. C. *Annual Report, Bulletin U. S. National Museum, Proceedings U. S. National Museum, Contributions U. S. National Herbarium, Special Bulletin, Papers by Charles Janet.*

Sociedade Scientifica de Sao Paulo, Sao Paulo, Brazil. *Report, Revista.*

Societas Entomologica Bohemiae, Prague, Austria. *Acta.*

Societas pro Fauna et Flora Fennica, Helsingfors, Finland. *Acta, Meddelanden.*

St. Louis Public Library, St. Louis, Mo. *Annual Report.*

Torrey Botanical Club, New York City, N. Y. *Bulletin.*

Tufts College, Tufts College, Mass. *Studies.*

University Museum, Michigan Academy of Science, Ann Arbor, Mich. *Reports, Bulletin, Reprints.*

University of Kansas, Lawrence, Kan. *Science Bulletin.*

University of Montana, Missoula, Mont. *Bulletin.*

University of the State of New York, Albany, N. Y. *Bulletin, State Museum Report.*

University of Vermont, Experiment Station, Burlington, Vt. *Annual Report, Bulletin.*

U. S. Department of Agriculture, Washington, D. C. Bureau of Plant Industry. *Bulletin.*

U. S. Geological Survey, Washington, D. C. *Annual Report, Professional Papers, Monographs, Bulletin, Water Supply and Irrigation Bulletin, Mineral Resources.*

Vassar Bros. Institute, Poughkeepsie, N. Y. *Reprint, Convention of 1788.*

Wilson Ornithological Club, Oberlin, Ohio. *Wilson Bulletin*.
Wisconsin Academy of Sciences, Arts and Letters, Milwaukee, Wisc.
Bulletin, Transactions.

The committee on nominations for trustees reported the following nominees:

Daniel Delehanty,
John De Morgan,
Stafford Clarence Edwards,
Samuel Alexander Henszey,
William Armour Johnston.

The report of the committee was received and the Association proceeded to ballot.

Twenty-three ballots were cast, resulting in the election of the nominees suggested by the committee, and the President declared them to be elected trustees of the Association for the ensuing three years.

The following were elected to active membership:

Louis A. Dreyfus, New Brighton.
Cornelius G. Kolff, Stapleton.
George W. Nock, West New Brighton.
James G. Timolat, New Brighton.

Dr. Arthur Hollick, delegate appointed to represent the Association at the celebration by the New York Academy of Sciences, on May 23, of the 200th anniversary of the birth of Linnaeus, read the following document to be presented by him on that occasion:

To the New York Academy of Sciences: GREETING.

It has been said by Taine that "every book and every man may be reviewed in five pages and those five pages in five lines." On this occasion, however, we are not asked to review the life or the books of the man in whose honor we are assembled, but to testify, as briefly as may be, to our appreciation of his work and what this work has meant to his posterity. Such a task is different from that which the reviewer is ordinarily called upon to perform, and to do it justice in words, within a reviewer's recognized limitations, would be impossible in connection with the name of Linnaeus. Fortunately, however, words are not necessary, and indeed are superfluous, where this appreciation is so clearly demonstrated in the fact that we accept the principles which

he formulated and pursue the methods which were his in all of our scientific activities. By merely recognizing and calling attention to this fact we show our respect for the man and what he has wrought far better than by even the most earnest and sincere attempt to express our sentiments in words.

Consciously or unconsciously the influence of Linnaeus is felt by all modern scientific workers. System, or rather the ability to systematize, is the key to progress in all lines of human endeavor, and science in particular owes its present commanding position to those who have recognized and applied the principles of Linnaeus in their work and who have accepted and applied his rules for the nomenclature of natural objects.

Linnaeus was preeminently a systematist, and it was this habit of mind, more than anything else, that raised him above his contemporaries in science. Without his masterly ability to coordinate and arrange his work in logical sequence and coherent groupings his great powers of observation would have lacked completeness. This ability was the special characteristic which enabled him to revolutionize the scientific work of his age and to influence so profoundly all that has followed.

To Linnaeus may well be applied the words of Bourget: "In life everything is unique and nothing happens more than once."

Submitted on behalf of
The Staten Island Association of Arts and Sciences.
Arthur Hollick, delegate.
200th anniversary of the birth of Linnaeus,
May 23rd, 1907.

The President then delivered his annual address as follows:

ANNUAL ADDRESS OF THE PRESIDENT.

It is doubtless my duty in the annual address required by the By-Laws to apprise you of the progress of the Association during the past year as well as of its condition and prospects.

The year just closed has witnessed an increasing interest and zeal on the part of our members and a growing influence in the community. Without special efforts our membership has been increased by the election of twenty-seven new members, and the number on our roll at the present time, 146, is larger than ever before in the history of the Association.

I sincerely regret to note the death of five of our members:

Oliver Durfee Clark.

George Meredith Whitehouse.

Augustus Acker.

Richard Fair.

Louis Balmat Baker.

For personal reasons, such as removal from the Borough, etc., four have resigned, and one gentleman elected has been unable to avail himself of the honor, owing to inability to attend the meetings.

The trustees have elected as corresponding member Mr. Leland Ossian Howard, B. S., Ph. D., of Washington, D. C., Chief of the Division of Entomology in the U. S. Department of Agriculture, and Permanent Secretary of the American Association for the Advancement of Science. Mr. Howard is the first to receive this honor.

The meetings of the Association during the past year have been well attended. At the meeting of February 16th, 1907, at the residence of the President, the number attending was greater than ever before in the history of the Association. All of the meetings have been characterized by pleasant social intercourse as well as by discriminating valuable scientific discussions.

For specimens and papers and interesting exhibitions during the year we are specially indebted to Dr. Philip Dowell, Mr. Alanson Skinner, Mr. Ira K. Morris, Dr. Arthur Hollick, Mr. James Chapin, Mr. William T. Davis, Mr. John Rader, Mr. Stafford C. Edwards, Mr. William Allaire Shortt, Mr. Howard H. Cleaves, Mr. L. A. Camacho, Mr. Osborn M. Curtis, Mr. George S. Humphrey, and Mr. H. B. Brownell.

The Association has been hospitably entertained at the homes of Mr. William H. Mitchill, Mr. William Allaire Shortt, and Mr. Justice Lester W. Clark. Your President has also been honored by its presence at his residence. The social features of these entertainments have been most delightful, and the Association is greatly indebted to the gentlemen who have so hospitably entertained our members.

The most notable social gathering of the Association was on November 12th, 1906, when a banquet was held in celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island. This banquet occurred at the Hotel Castleton. Thirty-nine members and twenty-five guests, ladies and gentlemen, attended the dinner. The event was unusual in the social history of the Island and was marked by charming sociability and good fellow-

ship on all sides. A memorial account of this banquet has been published by the Association and further reference is therefore here unnecessary.

From the reports of the Treasurer, you will observe that the finances of the Association are in satisfactory shape, and that our income and surplus are increasing. All obligations have been met promptly upon maturity, and the credit of the Association has never been better.

The annual prize of \$10 for work in natural science, open to pupils in the Curtis High School, has aroused considerable interest in that institution, and a number of competitors for the prize are at work. This is a valuable aid to the educational interests of the Borough, and I sincerely hope that the Association will be able to enlarge its usefulness in this particular field.

The assistance of the Association has been requested by the Hon. George Cromwell, President of the Borough, in selecting dates of important events in the history of the County to be inscribed upon the tablets erected in the Borough Hall. A committee, consisting of Mr. Ira K. Morris, chairman, Mr. William T. Davis, and Dr. Arthur Hollick, was appointed for this purpose. The committee carefully prepared a list of such dates extending from the earliest settlement of the County to the foundation of the Borough Hall and submitted the same to the Borough President. We are not apprised as yet of his final action in the matter.

The current business of the Association has been carefully transacted by the Board of Trustees and the Executive Committee, with the assistance of the officers of the Association, and I need not weary you by the details thereof as they are included in the annual reports previously submitted.

The scientific work of the members has been varied, conscientious, valuable, and interesting.

The publications of the Association have been issued in an improved form and in larger compass. In addition to the regular issues, a special memorial number commemorating the twenty-fifth anniversary of the organization of the Natural Science Association of Staten Island was issued March 15th, 1907. These publications continue to be sought by scientific bodies, institutions, and libraries throughout this country and abroad. The exchange list is constantly increasing and our progress in this respect, while devoid of unnatural stimulation, is entirely satisfactory. Additions to our library by exchange and donation have been larger than ever before. Our collection of scientific

specimens and objects of historical interest is constantly growing. Donations of books, specimens, and objects of great value are withheld because we have no place to put them and make use of them. What we actually receive, we have to store in the room generously provided by the Staten Island Academy or entrust to kindly disposed members for safe keeping.

On April 12th, 1907, Hon. James S. Whipple, Forest, Fish and Game Commissioner of the State of New York, upon the invitation and under the auspices of the Association, delivered a public lecture at the Curtis High School upon the preservation and development of the State Forests. Though the night was stormy there was a large attendance, and the lecture was received with evident interest and enjoyment. It should become a part of the settled policy of the Association to invite to our Borough scientists and others distinguished in the various walks of life, who may contribute by public addresses to the accomplishment of our purposes and to the intellectual enjoyment and development of our members and fellow citizens.

Aiming to carry out the purposes of the Association, the Board of Trustees have endeavored during the past year to secure the recognition and aid of the municipal authorities in the effort to instal the museum and library for the benefit of the public. Under this impulse an application was made on behalf of the Association to the Commissioners of the Sinking Fund to set aside the large room on the third floor of the Borough Hall for the purpose of publicly exhibiting the collection of specimens of the Association and devoting it and the scientific library to the use of the public and particularly of the teachers and pupils of the public schools.

On the 14th day of November, 1906, the Sinking Fund Commissioners unanimously passed a resolution as follows:

"Resolved, that pursuant to the provisions of section 7 of chapter 526 of the Laws of 1905, the President of the Borough of Richmond be and is hereby authorized to provide Room No. 309 on the third floor of the Borough Hall, in the Borough of Richmond, for the use of the Staten Island Association of Arts and Sciences, for the occupying and maintaining of the Museum Collection and Library of said Association; said permission and assignment to continue during the pleasure of the Commissioners of the Sinking Fund."

Application was then made on behalf of the Association to the Board of Estimate and Apportionment for an appropriation of \$3500, covering the cost of instalation and salaries of a curator and an assistant. It was supposed that the Borough President had sufficient funds

in his hands to furnish the room without a special appropriation. After a lapse of some time it appeared that this impression was not well founded and a second application was made to the Board of Estimate and Apportionment for an appropriation of \$4180 to cover the expense of providing show cases and otherwise furnishing the room to receive the collection of the Association. After a number of conferences with the Comptroller of the City of New York, it developed that the Board would hardly grant these applications together, and so on behalf of the Association it was proposed that if the City would supply the furniture for the room, including the cases and the expense of installation amounting to \$4180, together with heat, light, and janitor's service, the Association would provide the expense of caring for the collection and library. This proposition was pronounced by the Comptroller to be entirely acceptable to him and would receive his cordial endorsement before the Board. I, thereupon, invoked the special cooperation of the Borough President in the matter and received from him a promise to endeavor to bring the matter to a successful termination at the earliest practicable day.

I had hoped to be able to report to you at this meeting the favorable action of the Board of Estimate and Apportionment in the premises, but owing to the illness of the official charged with the duty of preparing the Comptroller's report to the Board of Estimate and Apportionment, the matter has not yet reached that body for its final action.

If the municipal authorities provide for the Association quarters well furnished to receive our collection and library, upon condition that we supply curatorial service for opening and maintaining a public museum, we must see to it that the condition is promptly accepted and faithfully complied with. This involves the raising of adequate funds, which may be accomplished by increasing our membership or raising the annual dues or by appeals to public spirited citizens for subscriptions, or by combining two or all of these methods. The results will determine not so much the question whether we will have a museum, for I regard that as certain, but whether we will at an early day have a museum of which we shall be proud.

We need not expect too much at the start, and we certainly should not undertake too much. We should begin conservatively, but resolutely. We should lay the foundation well and build up well. I do not urge you to be over-zealous, but calmly persistent in accomplishing what we have set our hand to. And I urge you to do this because it is right and helpful to the community, in which we live and to which

we owe an unselfish devotion of the best results of such culture and training as we have. We must not be discouraged by the lack of sympathy in public officials. None of us have graduated in the school that teaches the full measure of civic learning, public spirit, public progress, and the public's knowledge of what the public ought to provide for itself. If we become imbued with the love of this learning, we shall long to hand the lighted torch to our fellows, and in time it will surely reach our brothers in office.

I make no doubt that when our museum is once opened to the public under municipal patronage, we then lay the foundation for an institution that is bound to grow to large proportions. Accretions to our collection and library, numerous, acceptable, and valuable, are already in sight. And we shall need it to enlarge our publications, to include illustrations, memoirs, and much other matter that economy compels us now to omit; to provide public lectures by distinguished scientists, to encourage original research and investigation, to increase our library and to enlarge our museum.

Bearing all these things in mind, let us begin the new year with a steadfast and an indomitable resolution to attain, finally and well, our purposes.

Mr. Howard H. Cleaves exhibited photographs of hailstones and read the following paper:

A REMARKABLE HAILSTORM.

About the middle of the afternoon of June 23, 1906, it commenced to hail. The stones were of the usual size, and I thought I was doing well when I accumulated a tumblerful, the largest of which was the size of a small marble. Some minutes passed and no more stones fell, and those that lay on the ground had almost melted. My sister and I were standing on the lawn, when suddenly a white ball hit the turf not a great distance off and bounced two or three feet into the air. We looked over into the next yard, thinking that the youngsters had thrown an egg at us. This idea was quickly dispelled when with a gradual increase the white objects began to batter on the roof and on the lawn in rapid succession. The uproar in the house caused by the stones falling on the roof was very great. It was hard to make anyone hear what was said, even though but a few feet away.

Stones were now falling very thickly and rebounding from the ground three or four feet, some making indentations in the lawn and garden one

and one-half or two inches deep. All foliage on grapevines and on many shrubs and trees was greatly injured, and in some cases almost ruined. Twigs a quarter of an inch in diameter were snapped, and fruit of several kinds was knocked from the trees. Young peaches, apples, and pears were split squarely in two, exposing the green and half developed seeds within. Pieces of thick slate from the roof were strewn about on the grass beneath.

About six hundred panes of glass in the S. S. White Dental Company's building were broken, and the glaziers were kept busy for days afterward. A train of the Staten Island Rapid Transit Railroad, which passed through Princes Bay, had a good many of the north windows broken.

One of the stones that my mother and I measured showed a circumference of eight and one-quarter inches. The weight was between three and four ounces on our mail scales, and the stone was weighed after it had melted considerably.

Messrs. Frank Schultz and Sterling Wincapaw, who were in Tottenville at the time of the storm, and who beat a hasty retreat to an old shed on the beach for shelter, both testified that anyone not having been near the water when the stones were falling had missed a memorable sight. They said that several of the ice balls passed completely through the somewhat rotted roof of the shed. They also stated that each stone on hitting the surface of the water caused a great splash, sending the water several feet into the air.

Without much exertion two of us picked up about fifty pounds of ice and deposited it in the ice chest. When the "ice man" came later in the afternoon, we told him we did not care for any ice that day, for we had gathered ours on the lawn.

Photographs, shown on Plate III, were taken by Mr. Schultz, which verify to a great degree the above statements as to size, etc. Figure 1 shows six hailstones that completely filled one of Mr. Wincapaw's hands; figure 2 is a flashlight picture, showing them heaped up in an ice chest; and figure 3 shows Mr. Schultz's ice cream freezer full of hailstones. The family made ice cream later in the afternoon using the hailstones in the place of ordinary ice.

The stones resembled monstrous lozenges in shape, some being frilled or corrugated on the outer edge. Almost every one started in the center with a small ball of white snowy ice; then came a ring of transparent ice with tiny bubbles distributed through it, and so on to the circumference there were the alternating rings of clear and opaque ice.



1



3



2

Photographs of hailstones at Princes Bay, June 23, 1906 (p. 134).

This storm occurred on the same day and at about the same time that the waterspouts formed in the Lower Bay, which were described by Mr. L. A. Camacho at our meeting on March 16 (see *Proceedings*, vol. i, p. 100).

Mr. William T. Davis exhibited specimens of tree crickets and read the following paper:

A NEW SPECIES OF TREE CRICKET.

On the 4th of last August, while on Long Neck, I collected three tree crickets that had different marks on the first and second joints of the antennae than the other species known to me, and so were of considerable interest. At the end of the season I found that I had in all ten individuals of this species from various adjacent parts of New Jersey as well as from Staten Island. The characters are so distinct that it was decided to name the species, and it was accordingly called *Æcanthus exclamationis*. The description appeared in the *Canadian Entomologist*, vol. xxxix, May, 1907, p. 173, figs. 7, 8.

A list of the tree crickets now known to occur on Staten Island is as follows:

Æcanthus bipunctatus De Geer

“ *latipennis* Riley

“ *niveus* De Geer

“ *angustipennis* Fitch

“ *exclamationis* Davis

“ *quadripunctatus* Beut.

“ *fasciatus* Fitch

NOTES AND COMMENT.

Mr. Davis exhibited specimens of *Bufo americanus* Le Conte and *B. fowleri* Putnam. He stated that the common toad of Staten Island is the latter species, as determined by the descriptions contained in the recently published “Frog Book” by Mary C. Dickerson.

Mr. J. Blake Hillyer, on behalf of Mrs. George W. Curtis, presented an old map of Staten Island, published by M. Dripps, 34 Vesey St., New York, in 1872.

Mr. Alanson Skinner exhibited and described a collection of dried foodstuffs used by the New York State Indians, including corn, black-

berries, elderberries, beans of several kinds, squash, "Indian tobacco," boiled bread made of green corn mixed with beans, etc. Also a pack strap made of Indian hemp.

RECENT LITERATURE RELATING TO STATEN ISLAND.

"*New Species of Gall-producing Cecidomyiidae.*"—William Beutenmuller. *Bul. Am. Mus. Nat. Hist.*, vol. xxiii, 1907, pp. 385-400, pls. 13-17.

Thirty-one species of the gall-producing flies are noticed in this paper, and twenty of them are described as new. The galls produced by all but two of the thirty-one species are figured, and reference is made to other literature in which cuts of these two may be found. The paper is of particular local interest for the reason that most of the galls described may be found in the vicinity of New York City and five of the new species are mentioned as occurring on Staten Island.

W. T. D.

The meeting then adjourned.

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NOTICE.

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These Proceedings were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883 to June 3, 1905. and were included in nine volumes, separately indexed, as follows:

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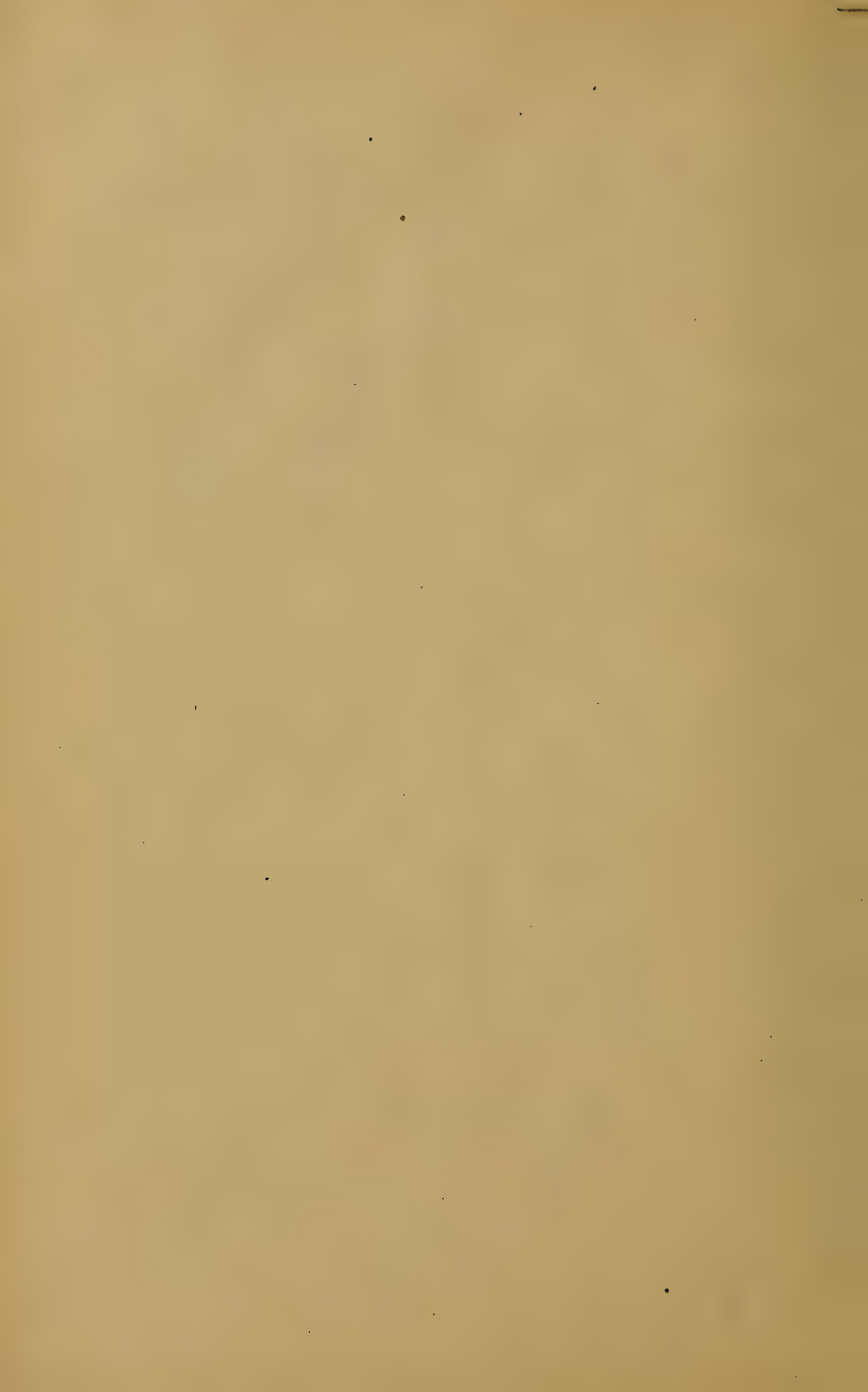
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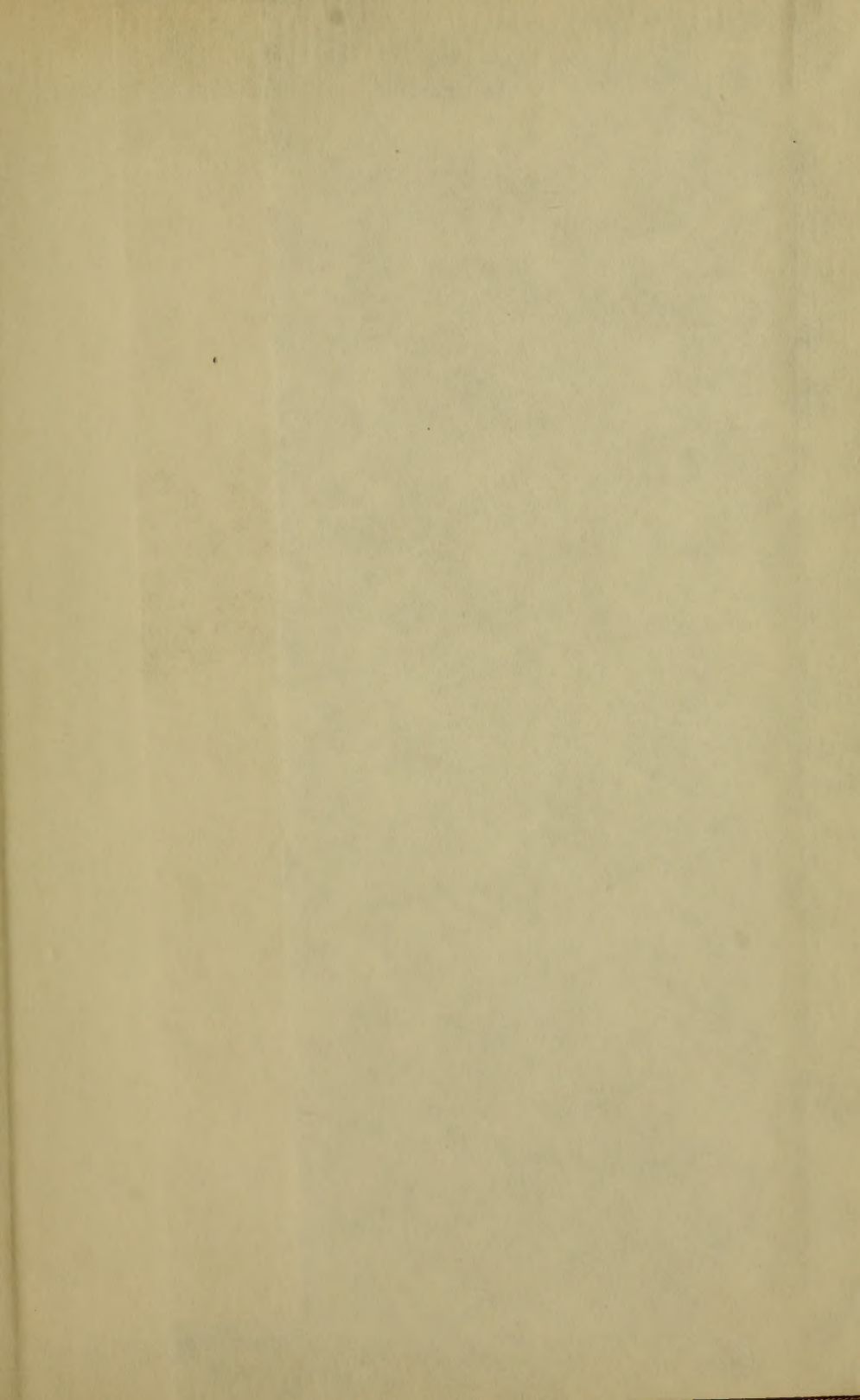
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